The Iron Age

A Review of the Hardware, Iron and Metal Trades.

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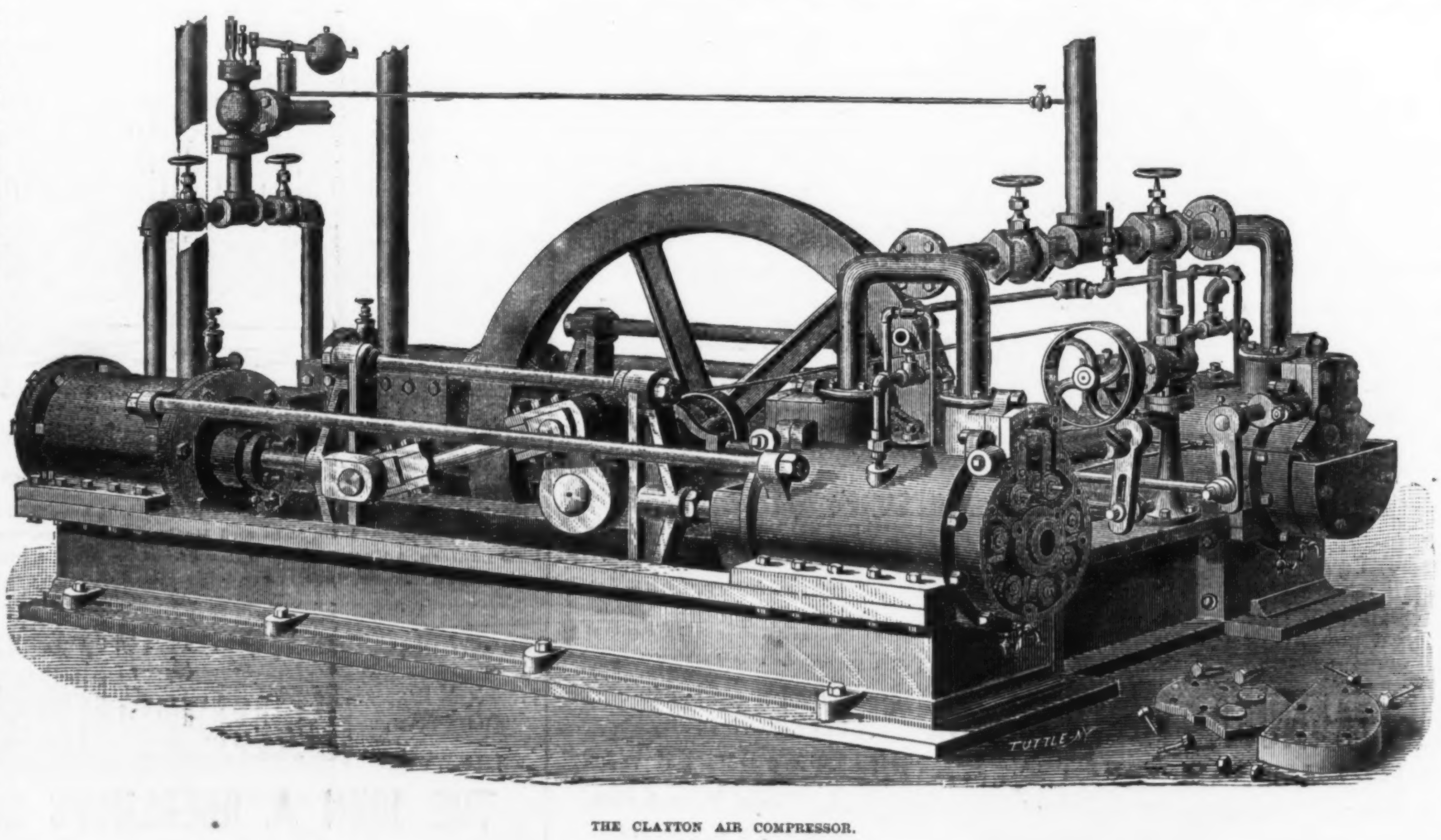
Experiments with the Clayton Air Compressor.

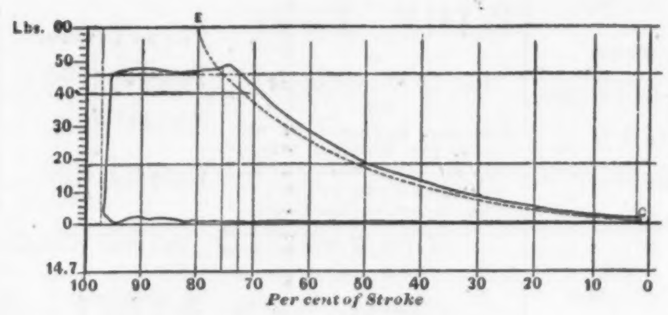
The rapid extension of the use of air compressors in metallurgical works, and notably in mines for the running of rock drills, has led to a rapid improvement in this class of machinery. The exigencies of good and economical working are being more thoroughly examined, and earnest efforts are being made to meet them. Among the more important points are: The necessity of keeping the air cylinder cool and depriving the compressed air of the heat made sensible by compression; the importance of ejecting from the cylinder all the compressed air at the completion of the stroke, and of lifting the delivery valves at the time when the pressure in the cylinder has reached that maintained as a working pressure in the receiver. Special attention has been directed to these points in designing the compressor manufactured by the Clayton Steam Pump Works, Brooklyn, an illustration of which is given in the accompanying cut. We have on former occasions spoken of the principal features of this design, the chief points of novelty of which at present is that a connecting rod has been substituted for the sliding boxes formerly used, the yokes being placed a sufficient distance apart to admit it. The weight of the yokes, pistons, rods, &c., is now carried by an adjustable "slipper guide," not visible in our engraving, which is intended to diminish the wear of the cylinder boxes. Our present purpose is to call attention to an effort made to definitely fix, by the application of the indicator to the air cylinder, the exact value of the use of the special devices employed to secure efficient and economical work.

The series of cards which we place before our readers were taken from the same air-cylinder under the same conditions of speed, &c., while testing a 12-inch diameter by 13-inch stroke Clayton Duplex Air Compressor, recently built for the Bay State Iron Company, of Port Henry, N. Y.

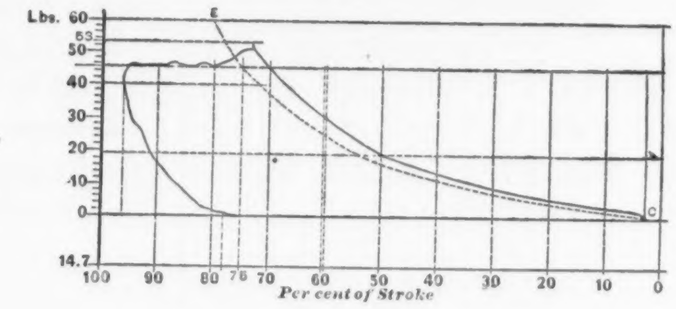
By taking a card with all the parts adjusted and in operation, and following it with others where the use of the special appliances employed in the first case are successively omitted, one by one, a comparison of results obtained in the different diagrams affords good evidence of the comparative value of the different parts. In working up the cards the same rules are applied as in working up steam engine cards. The air resistance to the advance of the piston, at a given rate of speed, is treated in the same manner as the steam pressure is treated in the ordinary steam engine card in propelling the piston forward at a given velocity.



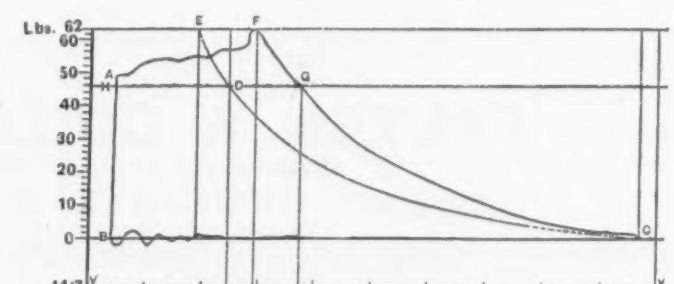
THE CLAYTON AIR COMPRESSOR.



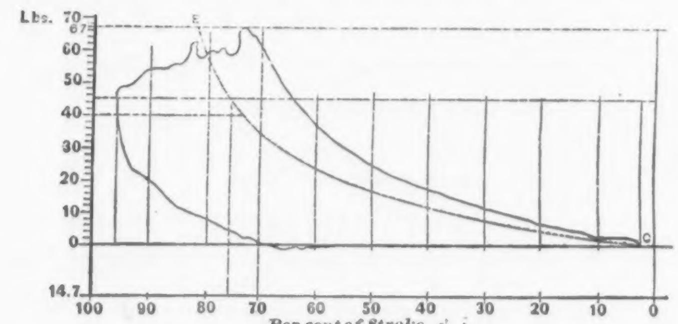
Indicator Card.—No. 1.—From Air Cylinder.



Indicator Card.—No. 3.—From Air Cylinder.



Indicator Card.—No. 2.—From Air Cylinder.



Indicator Card.—No. 4.—From Air Cylinder.

As air-compressing machinery has but recently begun to receive that degree of attention in mining and metallurgical operations which its importance demands, some explanation of the difficulties which present themselves in the construction and operation of such machinery are appropriate in this connection. If it were possible whenever compressed air is employed in propelling other machines to prevent the radiation and loss of the heat generated in its compression, its development would not be considered a matter of importance, because it would add as much additional pressure to the compressed air as was absorbed by its compression previously. One of the principal reasons which recommends the use of compressed air is the convenience with which it can be used for transmitting power through long distances, and be stored up for an indefinitely long period without suffering the loss which would accompany the use of steam under similar circumstances. Therefore it becomes a matter of vital importance, in the construction of air compressors, to secure the heat as fast as possible during compression, and by so doing reduce the amount of power required to compress a given volume of air. In considering the merits of any diagram from an air cylinder, it s important to observe how nearly the compression line follows the hyperbolic curve, which represents an increase of pressure at a constant temperature. An approximation to the curve can only be obtained by an absorption of the heat as rapidly as it is rendered sensible by the compression.

For convenience the hyperbolic curve is shown on all the diagrams accompanying this article.

In the Clayton Compressor the air cylinder is surrounded by a water jacket of somewhat novel construction. The water is received into the jacket through pipes connected with the top of the air cylinder near the center, partitions being placed in the jacket in such a manner that they compel the water to circulate from the center along the top to and around the ends of the cylinder for one-fourth of its length. At this point the greatest compression of the air takes place, and consequently the most heat is generated. The water then passes around the center of the cylinder, discharging at the top, thus bringing the temperature of the middle of the cylinder to the same as at the ends and top, and securing the jacket against an absence of water.

The induction and eduction valves are placed in the cylinder covers, and are so arranged that the valves and seatings can be unscrewed and removed by taking off the covers. Disks of semi-elastic material are interposed between the valve faces and seats, with a view to protect the metal surfaces from wear. The discharge valves are lifted by an adjustable tripping device, which can be set to lift the discharge valves at any desired point in the stroke, thus affording the means for a free escape for the air in the cylinder as soon as it has reached the "working pressure." The suction valves which open into the cylinder are supplied with safety stems, in order to prevent any accident from following the breakage of a valve from its stem, one of the most fruitful sources of accidents to air compressors. The interior of the cylinder is supplied at each stroke with a fixed amount of lubrication (water or oil) by means of an automatic feed valve, the construction of which is such that no fluid can pass into the cylinder when the compressor is not working, and the danger of flooding the cylinder is guarded against.

These compressors have an air governor, which we described on a former occasion. Its object is to permit the attainment of any pressure desired, by simply changing the position of the weight on the lever of the governor, and to stop the compressor whenever the air pressure exceeds the desired point, readmitting steam when the air pressure falls.

When the accompanying diagrams were taken, the compressor was delivering the air into a receiver, the safety valve of which was set at 45 pounds. Consequently the resistance was uniform during the trial. The speed also was the same (53 revolutions per minute) excepting when No. 1 was taken. The speed in this case was increased from 53 to 65 revolutions per minute, in order to determine the limit to which the speed of the air piston could be increased and still the cylinder be filled with air of normal density before reaching the end of the stroke, when compression commences, without charging the proportion of "inlet valve" opening to area of piston, which is adopted in constructing these compressors.

Card No. 1 was taken from the air cylinder when supplied with water for lubricating the interior surfaces, and also filling the "clearance" spaces. Water was supplied to the exterior jacket, and the "tripping device" adjusted to act at the proper time in opening the delivery valves. The diagram shows that at the speed at which the compressor was working, the action of those parts which could directly influence the movement of the indicator was very good. From the point at which induction ceased and compression commenced, the pencil followed the "hyperbolic," or curve of constant temperature.

Card No. 2 shows that without the tripping device the pressure is raised, before it lifts the discharge valves, from 46 to 62 pounds. The water was running into the cylinder, as in card No. 1, but not into the water jacket, and the line shows how the air is heated and expanded in advance of its full pressure.

Card No. 3 shows that, although the suction valves are lifted automatically, a heavy loss is occasioned by the absence of water from the cylinder, as the compressed air not discharged at the end of the stroke followed the piston back about one-fifth of its stroke.

Card No. 4 was taken from the cylinder when there was no water in the jacket or in the cylinder, and the valves were lifted without the assistance of the toes. This shows a heavy loss of power by the heating of the air by its passage into a hot cylinder, a great loss in compressed air expanding back in the cylinder and occupying the space which should be filled by fresh air, and a large waste of power in the lifting of the valves, viz., from 45 pounds (the working or receiver pressure) to 67 pounds, the pressure at which the valves lifted.

Card No. 5 (see page 3) was taken from the steam cylinder of one of these compressors, and shows the degree of economy attained in its consumption of steam in proportion to the amount of effective working power in the shape of compressed air given. The compressor (with steam and air cylinders of equal diameter and stroke) was running at 90 revolutions per minute, with a boiler pressure of 70 pounds, cutting off the steam at 52 per cent of the stroke, and giving an air-receiver pressure of 100 pounds.

The Earth's Population and Area.—In the new issue (No. 6) of Behm and Wagner's well-kown "Bevölkerung der Erde" there are several points of fresh interest. Since the last issue, about two years ago, the population would seem to have been increased by about 17,000,000, the present population of the earth, according to Behm and Wagner, being 1,456,000,000, as against 1,439,000,000 two years ago. This, however, cannot be set down to absolute natural increase, much of the addition being, no doubt, the result of new and more accurate statistics. The new issue has, for example, to take account of several new censuses, some of them in countries where the population has not been accurately counted for many years, if at all. We have, for example, the census of Spain, in 1877; Portugal, 1878; Greece, 1879; Bosnia and Herzegovina, 1879; New Zealand, 1878; Peru, 1876; Denmark, 1880, besides several smaller places. The total population is divided among the continents as follows: Europe, 315,929,000 or at the ratio of 32.5 per square kilometer; Asia, 834,707,000, or 18.7 per square kilometer; Africa, 205,679,000, or 6.9 per square kilometer; America, 95,495,500, or 2.5 per square kilometer; Australia and Polynesia, 4,031,000, or 0.4 per square kilometer; the remainder, 82,000, belong to the North Polar region, mostly Iceland and Greenland. Although the census of the United States was taken some months since, and some of the data oozed out in an irregular fashion, Herren Behm and Wagner have not made any use of the results, wisely preferring to await official statistics. They calculate that the census ought to give a result of at least 47,000,000. The editors have also made a fresh planimetrical calculation of the area of Africa, yielding a result of 29,283,390 square kilometers. Of this area about six and a third millions are forest and culture land, the same area savannahs and scattered woods, 1,500,000 bush, 4,200,000 steppe, and 10,500,000 desert. This last item seems appalling, but it should be remembered that much of this desert may be reclaimable, and that it includes large areas of fertile oases. A new planimetric calculation of the area of South America yields a re-

sult of 17,732,128 squares kilometers, differing greatly from the sum of the official areas given by the South American governments.

Paraffine as a Protection to Wood and Iron.*

In chemical technology great difficulties sometimes arise when it is desired to manufacture on a large scale preparations which may be obtained with ease in the laboratory. In most cases the reason of this failure is the fact that in the manufacture the use of glass, porcelain, platinum, &c., which successfully resist the effects of the various chemical agents, must be dispensed with, and cheaper and less easily breakable materials, such as iron, copper, lead and wood, substituted. Wood especially cannot be replaced by any other material in the wholesale preparation of muriatic lyes, although the same, according to the strength and temperature of the liquid, undergoes sometimes very rapid destruction. Dr. Schal says, in the *Würt. Gewerbe blatt.*, that he acquired this experience more particularly in 1874–77, in alizarine works, and that he found in paraffine a means which efficiently protects the wood against damp, acids and alkalies, and by which a great saving is effected. The wooden vessels used, especially tanks of pine wood, for boiling acid and alkaline lyes, as well as casks of oak of the heaviest weights, for separating acid alkaline lyes at a pressure of a half to two atmospheres, were generally totally rotten after a few months, but they lasted for two years when impregnated with paraffine.

Before treating with paraffine, however, the vessels must be thoroughly dried for about three weeks by leaving them in warm and dry air, in order to prepare the wood for the absorption of the paraffine solution in its pores. The latter solution is prepared in the following manner: A part of the paraffine is melted in a spacious metal vessel over a moderate fire, the mass being stirred, the boiler taken from the fire, best moved into the open air, stirred until the mass begins to congeal at the edge, and then about six parts of petroleum ether or bisulphide of carbon are poured in and stirred until solution. The preparation is then put into vessels that may be hermetically closed, or it may be used at once. In preparing the paraffine solution great care must be exercised, as paraffine, as well as petroleum ether or bisulphide of carbon, is especially inflammable, as even the vapor of the two last-mentioned substances, if mixed with air, may give rise to dangerous explosions. Those substances must, therefore, be kept in a cool place, far from light or fire, and well stoppered. The wood is best saturated in dry and warm weather, as then it dries more quickly, and a smaller quantity of the solving agent is necessary. In winter six parts of the solvent generally do not suffice. This proportion changes with the quality of the paraffine and the temperature; paraffine solving with difficulty is better than the more readily soluble article. Vessels easy of access, such as tanks, tubs, &c., are coated in the open air with the solution as long as the wood will absorb it. The solvents evaporate very quickly, leaving the paraffine behind, so that two or three coatings may be laid on in succession. If the vessel is to be exceptionally well prepared, it is left for a day to dry, and then another layer of the paraffine given. For vessels in which steam is used for boiling the liquids they contain, he applies after a few days a coating of varnish, because the melting point of paraffine is below the boiling point of water, and it is thus in time driven out of the pores by the water.

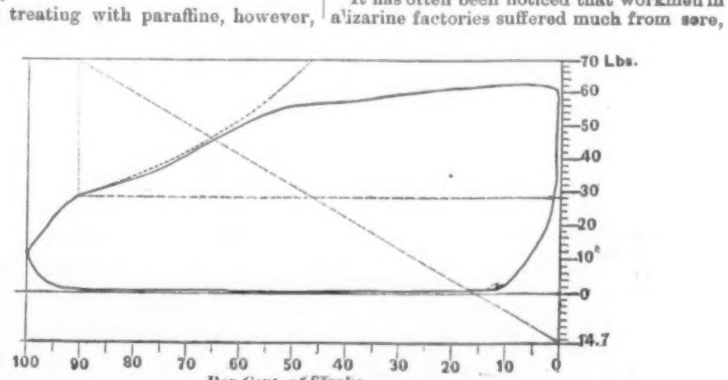
Instead of oil varnish, the vessels, after being well rubbed down, may also be coated with a thin solution of soluble glass, then dried and washed with diluted hydrochloric acid. The silicic acid thus formed clogs up the pores from the outside, and provides a protection to the paraffine against the hot water. For vessels which are used only with a moderate heat or cold, the coating of paraffine suffices perfectly. The paraffine is hardly dissolved by diluted cold alcohol, is not poisonous, and may also probably be used with advantage for vessels for keeping liquid. In the case of barrels, the solution was poured in simply after drying them; for an oak barrel holding from 9 to 10 hectoliters, 1 kilo. of paraffine dissolved in petroleum ether was required. All openings were then well closed and the barrel rolled about and over for about an hour, so as to bring all parts in contact with the solution. The barrels were finally left standing on their ends for half a day, after which time the remainder not absorbed was emptied and used for the outside coating. Before applying the solution outside, however, the barrels must be well cleaned, for dirt naturally closes the pores of the wood. As these barrels were very expensive, and had to sustain a pressure of two atmospheres, besides being exposed to a high temperature, they received on both sides an additional coating of oil varnish. It is, however, necessary to let such a barrel stand in the open air at least a fortnight for drying, and as a precaution fire must be kept away from the barrel while being prepared. As a further precaution, in applying the solution inside, the workman must not be left alone, as it frequently happens that stupefying vapors from the solvent of the paraffine arise, which stupefaction, however, soon disappears in the open air. The oil varnish may also be diluted with petroleum ether, poured into the barrel, and then the latter rolled about, as above described; but many places escape saturation in this operation. After coating with varnish, the barrel is once more dried, and then filled with water, in order to force out the combustible gases. This is much to be advised, as an explosion once took place in consequence of a workman trying to enlarge a hole with a red-hot iron, contrary to orders. After the last operation, the inner sides of the various vessels were rubbed down with a dry duster, so as to take off all loose particles.

If impregnation of wood is intended on a large scale, the wood is best stacked in iron boxes, the paraffine solution poured over it, the solution not absorbed drawn off after some time, the solvent forced out of the wood by means of warm air, and recovered by condensation in a cooling apparatus. If the various manipulations are carefully carried out, the duration of vessels thus prepared is increased from four to six fold, while the outlay is comparatively small, leaving out of consideration that the contents of such vessels are frequently lost by the bottom being forced out.

Paraffine, melted with equal parts of linseed oil or rapeseed oil, is also useful for coating iron vessels, which without a substantial preservative are very liable to rust in manufactories of chemicals. Paraffine likewise protects skin efficiently against wet, alkalies (especially lime), acids, &c.

It has often been noticed that workmen in alizarine factories suffered much from sore, ulcerating and swollen hands, especially during winter. After the workmen began to use, twice daily, a solution of paraffine with rapeseed oil and petroleum, chapped hands (not to mention swollen or ulcerated hands) became a scarcity. The solution is produced by melting three parts each of paraffine and rapeseed oil, removing it from the fire, and adding eight parts of petroleum while stirring the mixture. Before using, the solution is stirred a little, and the hands rubbed with it while they are clean and dry. In larger factories, earthenware and tin vessels, filled with this ointment, are placed at convenient spots, and it is believed that the manufacturer as well as the workmen will find this pay.

* Journal of the Franklin Institute.



The Clayton Air Compressor.—Indicator Card from Steam Cylinder.—(See First Page.

Nickel.

Since the convenient five-cent coin, which in common talk is called "a nickel," has come into general circulation, the question above is asked, either mentally or orally, hundreds of times every day, and but few get an intelligent answer. In China and India, a white copper, called pack-tong, has long been known and has been extensively used both there and in Europe for counterfeiting silver coin. About the year 1700 a peculiar ore was discovered in the copper mines of Saxony which had the appearance of being very rich, but in smelting it yielded no copper, and the miners called it kupfer-nickel, or false copper. In 1754, Constadt announced the discovery of a new metal in kupfer-nickel, to which he gave the name of nickel. It was in combination with arsenic, from which he could relieve it only in part. The alloy of nickel and arsenic which he obtained was white, brittle, very hard and had a melting point nearly as high as cast iron. It was not until 1823 that pure nickel was obtained by analysis of German silver which had for a number of years been produced at Suhl, in Saxony. Its composition was ascertained to be copper, ten parts; zinc, five; and nickel, four. If more nickel be used the alloy is as white as silver and susceptible of a very high polish, but becomes too brittle and hard to be hammered or rolled, and can be worked only by casting. Pure nickel is a white metal and will tarnish readily in the air. Unlike silver, it is not acted on by the vapor of sulphur, and even the strong mineral acids attract it but slightly. Nickel has the hardness of iron, and like it, has strong magnetic properties, but cannot be welded and is soldered with difficulty. Pure nickel has heretofore been used chiefly for plating, for which purpose its hardness and power to resist atmospheric influences admirably adapt it. Within the last year the French have succeeded in rolling the metal into plates, from which spoons and other table furniture may be pressed. Nickel bronze, which consists of equal parts of copper and nickel, with a little tin, may be cast into very delicate forms, and is susceptible of a high polish. Mines of nickel are worked at Chatham, Conn., and Lancaster, Pa., and it is said to be found at Mine Le Motte, Mo., and at several points in Colorado and New Mexico, where but little attention is paid to it. It is extensively mined in Saxony and in Sweden, but the late discovery of a new ore (a silicate of nickel) in New Caledonia will probably supercede all the other ones. The inexhaustible supply of this ore, the ease with which it can be smelted and the richness of the ore will probably suspend the use of the arsenical ores, and yet bring nickel into common use. Switzerland, in the year 1852, made a coin of German silver, which is identical in composition with our nickel coin. The United States made nickel cents in 1856, and eight years later coined the five cent pieces. Belgium adopted nickel coinage in 1860 and Ger-

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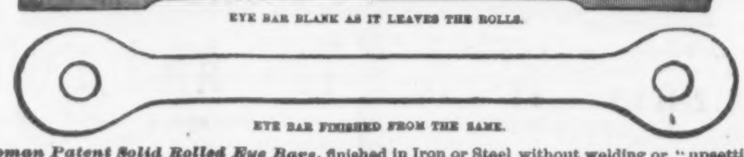

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many in 1873. England has lately coined nickel pennies for Jamaica, but at home she and France adhere to the clumsy copper small change.

SCIENTIFIC AND TECHNICAL.

In discussing the conclusions reached by M. E. Wadsworth on the

ORIGIN OF THE COPPER ORES OF THE LAKE SUPERIOR DISTRICT,

Prof. J. D. Dana gives expression to the following as his theory on the subject. He holds that the copper came up with the igneous rock, and so also the moisture that made the steam cavities of the amygdaloid, though neither was derived, the one nor the other, from the deep-seated source of the eruption, but from sources encountered on the way up; that, while the rock was slowly cooling through the range of temperatures from that of fusion, over 2000° F., to 212° F. (when at last the vapors began to lose their chemical activity), and thence to 100° F. and below, the igneous material sooner or later received its vapor-made cavities in places where the pressure was little enough to permit it and the moisture was abundant enough to produce them, and the rocks also became jointed and fissured through the progressing contraction; that other fissures may have been opened by new subterranean movements while the cooling was going forward—that is, before the era of eruptions for the region had passed—and gave passage for ascending vapors and whatever they bore along; that the moisture which made the amygdaloidal cavities was the moisture which altered the pyroxene or other minerals of the rock to chlorite, and made the zeolites and quartz out of chiefly its feldspars, and that this kind of transformation of the igneous rock near all cavities or fissures into quartz and hydrous silicates kept going on as long as the rock was undergoing its refrigeration, different minerals resulting at different stages in the temperature; and that the copper which came up with the igneous rock was, in the course of the cooling, carried by the aid of the vapors into fissures and so formed veins, and into other cavities to help make amygdules at the same time that other minerals were making them, and so produced sometimes a cupriferous amygdaloid; and that simultaneously it was carried also, to some extent, into the adjoining sandstone. But all the conditions of the process are not yet explainable, and, therefore, while differing widely from Mr. Wadsworth on this and other points in his volume, Prof. Dana agrees with him in this, that "until we know more about the occurrence of the copper, all theories regarding its origin should be held with a loose grasp, and dropped as the facts developed may require."

Prof. Edward C. Pickering has just published an important preliminary statement in regard to

NEW PLANETARY NEBULÆ.

At the Harvard College Observatory the spectra of nebulæ have been examined for some time, by means of a direct vision prism placed between the eye-piece and objective of the telescope. When a star is brought into any part of the field, it is spread out into a colored line of light. A nebula, on the other hand, forms a point or small disk of light, while a minute cluster gives a spectrum like a star. The difference in these appearances is so marked that the idea suggested itself that this device might serve to detect any minute planetary nebulæ which could not otherwise be distinguished from stars. A systematic search was undertaken, and although about 100,000 stars have been so far examined and only about 100th part of the heavens has, as yet, been explored, four new objects were discovered. Of these, three were distinctly recognized as new planetary nebulæ, while the fourth had a very curious spectrum, two bands being seen near the ends of a faint continuous spectrum. It is difficult to know in what class to place this body, as it resembles a nebula in some and a star in other respects.

An interesting fact, more recently brought out by Prof. Bell and Mr. Tainter in their experiments on

THE PRODUCTION OF SOUND BY LIGHT,

is that an intermittent beam of light can be made audible without the aid of a telephone or battery. It will be remembered that Prof. Bell succeeded in using an intermittent beam of light as a transmitter of sound, with the aid of the fact that the conductivity of the electric current by selenium varies according to its exposure to light. By speaking against a flexible mirror, the undulations of the latter, produced by the sound waves, affected an undulating beam of light thrown upon and reflected by it. At a considerable distance from this mirror the beam was received by a reflector, in the focus of which was placed a selenium cell, connected in a local circuit with a battery and a telephone. With this apparatus Mr. Bell heard sentences spoken at the mirror at a considerable distance from the selenium cell, thus proving that sound may be transmitted by light. As we have already stated, Messrs. Bell and Tainter have now found that it was possible to dispense with the telephone, and that it was possible to hear sounds by holding the ear to a thin diaphragm of any substance upon which the intermittent beam of light had been focussed.

It is stated by *Engineering* that

AN IMPROVEMENT IN TANNING LEATHER

has been brought out in Germany which promises to be of great importance, as it dispenses with the ordinary tanning materials. Dr. Christian Heinzerling, of Frankfort-on-the-Main, is the inventor. His process involves the use of inorganic chemical compounds only, the special member of which is bichromate of potash. Generally speaking it may be said that the other compounds—all of which are readily soluble in water—have as their function the decomposition of the bichromate of potash, so as to set free its contained chromic acid, which is really the chemical agent that exerts the tanning effect on the tissue forming the corium or lower layer of the animal hide. There are many considerations which seem to justify us in expecting great results from the adoption of the Heinzerling process. One leading fact is, that it requires for its

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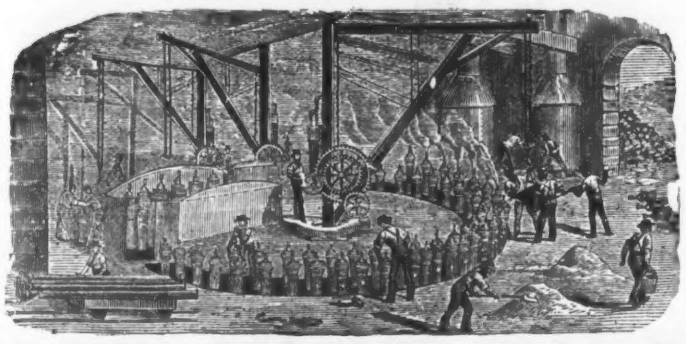

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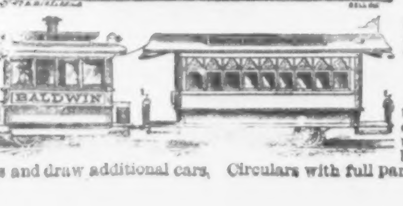

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completion a period of only from four to five or six weeks, whereas the bark-tanning process requires from 12 to 20, or occasionally even 30, months for its completion. It has already been adopted in 14 tanneries in Germany, and is being introduced into Russia, Belgium, France and Italy.

The Consumption of Steam in Rolling Steel Rails at Seraing.*

BY J. KRAFT, CHIEF ENGINEER OF THE JOHN COCKERILL WORKS, SERAING.

1. LOSS OF STEAM AT THE ENTRANCE OF THE RAIL INTO THE ROLLS.

At the moment when the rail enters the rolls the pistons of the engines occupy a certain position and leave a space behind them. This space must first be filled when steam is admitted, and it does not, therefore, do any effective work. The loss of steam thus occasioned depends upon the position of the pistons.

In drawing the pistons of a double cylinder engine at their various positions, it will be easily found that the maximum loss is equal to the volume of one and one-half cylinders and the minimum one-half cylinder, the average being one cylinderful. For a three-cylinder engine the maximum loss is two cylinderfuls, the minimum one cylinderful, and the average one and one-half cylinder. For a three-cylinder machine the maximum is two, the minimum is one, and the average is one and one-half cylinderfuls of steam. If both are of equal power, the cylinders of an engine of the latter class are two-thirds of those of a double cylinder engine, so that the maximum loss is less and the minimum loss is greater, the average remaining the same. Both classes of engines are, therefore, equal in this respect. The following calculations refer to a two-cylinder engine, and the maximum loss of one and one-half cylinderfuls of steam at the time of the entrance of the rail between the cylinders is assumed in all cases.

2. THE QUANTITY OF STEAM NECESSARY FOR ROLLING.

A. Blooming Train.—We may call l the original length of ingot; L, its length after rolling; m, the number of passes; c, the circumference of the rolls; T, the theoretical number of revolutions of rolls necessary for rolling; r, ratio of gearing, and N, number of cylinder fuls of steam necessary for rolling.

The ingot is altogether stretched $L-l$, and as this is done in m passes, we may assume that the stretching done to one pass is:

$$\frac{L-l}{m}$$

The length of the ingot after the first pass is:

$$l + \frac{L-l}{m}$$

and the number of revolutions of the rolls during the first pass:

$$n_1 = \frac{1}{c}\left(\frac{L}{m} + \left(\frac{m-1}{m}\right) l\right) = \frac{1}{cm} L + \frac{1}{cm} l\,(m-1)$$

The length of the ingot after m passes will be:

$$l + m\left(\frac{L-l}{m}\right) = L$$

and the number of revolutions of the rolls during m'th pass.

$$n_m = \frac{m}{cm} L + \frac{1}{cm} l\,(m-m) = \frac{L}{c}$$

Adding the number of revolutions of the rolls during all the passes we have:

$$T = \frac{L}{cm}\left(1+2+3\ldots\ldots+m\right) + \frac{l}{cm}\left[m^2 - (1+2+3\ldots\ldots+m)\right]$$

Now as $1+2+3\ldots\ldots+m$ is equal to $\frac{m(m+1)}{2}$ we have:

$$T = \frac{1}{2c}\left[L(m+1) + l(m-1)\right]$$

This is the formula for finding the number of the revolutions of the rolls necessary for rolling in in passes and with rolls having a circumference of c and ingot elongated from l to the length L.

Every revolution of the rolls corresponds to r strokes of the engine, and, taking the case of a double cylinder engine, requires four cylinder volumes of steam. The number of cylinder volumes of steam necessary for blooming is therefore:

$$N = \frac{2r}{c}\left[L(m+1) + l(m-1)\right]$$

B. The Finishing Train.—This has no gearing, being direct acting. Therefore $r = 1$ and we have:

$$N = \frac{2}{c}\left[L(m+1) + l(m-1)\right]$$

3. APPLICATION TO THE STEEL RAIL MILL AT SERAING.

We may take as an example the rails for the Belgian state railways, which are rolled in double lengths of 59 feet 6.6 inches. M. A. Greiner, chief engineer of the steel works, furnishes the following data: Weight of the ingot, 1677 pounds; length, 3.67 feet; dimensions of base of ingot, 13.58 inches square, and of top of ingot, 11.81 inches square. The length of the ingot after succeeding passes in the blowing train was:

1st	groove	3.87	to	4.26	feet	in	3	passes.
2d	"	4.59	"	5.12	"		2	"
3d	"	5.41	"	5.74	"		2	"
4th	"	6.23	"	7.41	"		2	"
5th	"	7.94	"	8.86	"		2	"
Total number of passes......							11	

In leaving the blooming train the ingot has therefore obtained a length of 8.86 feet, and a section of 7.71 inches square.

In the finishing train the bloom is stretched in successive passages as follows:

Roughing Train.

Passes.	Feet.	Passes.	Feet.
1st	9.8	4th	15.1
2d	11.5	5th	16.9
3d	13.1	6th	20.7

Finishing Train.

Passes.	Feet.	Passes.	Feet.
1st	24.6	5th	48.5
2d	29.2	6th	61.7
3d	35.1	7th	64.2
4th	38.7		

In all, 13 passes. A 29 foot 6.34-inch rail weighs 754 pounds; 400 rails, or 136 tons, being rolled in 12 hours.

In the case of the Seraing Rolling Mills, and the rails for the Belgian State railways, we have therefore:

For the Blooming Train.

$l = 3.77$ feet.
$h = 8.86$ "
$m = 0.11$ "
$c = 8.90$ " (diameter of rolls 34 inches).
$r = 2$.

Introducing these values into our formula we have for $N = 64.7$ cylinder volumes. To this we must add 1½ cylinder volumes of steam as loss for each pass, or, in all, 16.5 volumes, and we find therefore that the rolling of a bloom for a double length of rail requires 81.2 cylinder volumes of steam. The blooming train engine at Seraing has cylinders 32.01 inches in diameter and 3.94 feet stroke. The volume of the cylinder is therefore 22.245 cubic feet, and if it is assumed that steam is cut off at seven-tenths of the stroke, and that the clearances amount to one-tenth, it will be seen that each cylinder uses $0.8 \times 22.245 = 17.796$ cubic feet of steam. For good working an effective boiler pressure of 3½ atmospheres, or 52½ pounds, is necessary. In the cylinders, however, an initial pressure of only 3 atmospheres, or 45 pounds, can be counted upon. A cubic foot of steam of 4 atmospheres pressure (3 atmospheres effective pressure) weighs 0.133 pounds, and thus every cylinderful of steam consumes $0.133 \times 17.796 = 2.367$ pounds. The rolling of an ingot in the Seraing blooming train requires, therefore:

$$2.367 \times 81.2 = 192.2 \text{ pounds.}$$

For the Roughing and Finishing Trains.

$l = 8.86$ feet.
$L = 64.21$ feet.
$m = 13$.
$c = 6.29$ (diameter of rolls 2.0 feet.)

Entering these values into the formula, we find that the number of volumes of cylinder is $N = 320$.

Adding to this 1½ cylinder volume as loss during every pass, or 19.5 volumes in all, we have as the consumption of steam in rolling in in the weighing and finishing rolls 339.5 cylinder volumes. The engine for this train has two cylinders, having a diameter of 3.28 feet and a stroke of 3.94 feet. The cubic contents of each cylinder are, therefore, 33.286 cubic feet. As steam is admitted during seven-tenths of the stroke and there is clearance space of about one-tenth, each cylinderful requires $0.8 \times 33.286 = 26.625$ cubic feet of stream. A cubic foot of steam at three atmospheres pressure weighs 0.133 pounds, so that the steam for each cylinderful weighs 3.54 pounds. The rolling of a bloom with a double rail, therefore, requires $3.541 \times 339.5 = 1202.2$ pounds of steam.

Adding this to the quantity used in the blooming mill, we have a total consumption of steam, for a double rail weighing 1507.95 pounds, of 1394.4 pounds of steam.

4. BOILERS.

Four hundred single or 200 double rails are rolled in 12 hours. Counting an actual working time of 10 hours, 20 double rails are rolled per hour. Every double rail requires 1394.4 pounds of steam, so that the consumption of steam per hour is 27,880 pounds, or 465 pounds per minute. If it is assumed that the boilers evaporate 0.06144 pounds of steam per minute per square foot of heating per minute, it will be necessary to have at least 7236 square feet of heating surface. The boilers used at Seraing are plain cylinders 5 feet 3 inches in diameter and 52.5 feet long, and have a single heating drum 3 feet 7 inches in diameter and 46.6 feet long. They each have a heating surface of 1076.4 square feet. Seven boilers are, therefore, necessary.

When the mill was started only six boilers were laid down, place being provided for an additional one; this number of boilers was found sufficient at first when smaller quantities of rails were being rolled, but as the production advanced eight boilers were finally provided. These boilers were placed at one side of the Bessemer blowing house, six similar boilers (in use before the rail mill was started) being situated at the other side, providing steam for the Bessemer blowing engines, the hydraulic pumps of the accumulators, the steam hoists for the cupolas, and the engines for driving the cupola fans. The fourteen boilers are always connected, and two are kept as spare boilers. Besides the above-named engines the boilers supply steam also to the following: Two condensing engines, one driving a blooming and the other a finishing mill; a small engine for driving the rolls for carrying the rails up to the saw, two rail saws, one ingot drawing machine, a small steam hammer, two rail-straightening presses, an engine working the rail-finishing shop, and three donkey pumps. Recently one of Sinclair-McNichol's tubulous boilers with 484.4 square feet of heating surface, was placed over one of the heating furnaces, which on trial was found to evaporate 1764 pounds water per hour at 60 pounds pressure.

* Revue Universelle des Mines.

In Germany, where the concentration and dressing of ores and coal have for many years been made a subject of much study, they are beginning to dress iron ores also. Herr Kaiser, of the Beilstein Mine, in the Dill Valley, Nassau, has succeeded in concentrating a specular ore up to 60 per cent. of metallic iron, at the same time reducing the percentage of phosphorus, which formerly ranged between 0.143 and 0.273, to as little as 00.3 per cent. Other concentrating works for iron ores are established at Stillings-Eisenzug and Unverhofft-Glueck, near Dillenburg, and at Abendstern, near Wetzlar.

It is stated that the alleged meteorite which is stated to have fallen at Schroon Lake is a hoax. It is without any of the characteristic properties of meteorites, and was found upon examination by a competent mineralogist to be composed chiefly of quartz.

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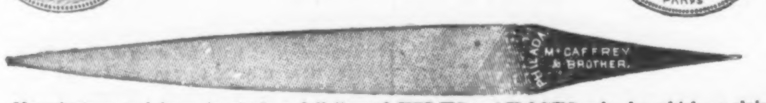

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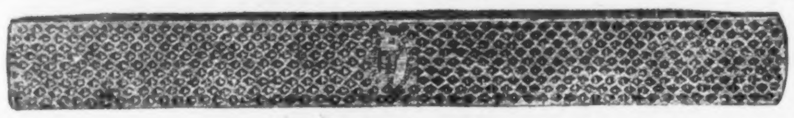

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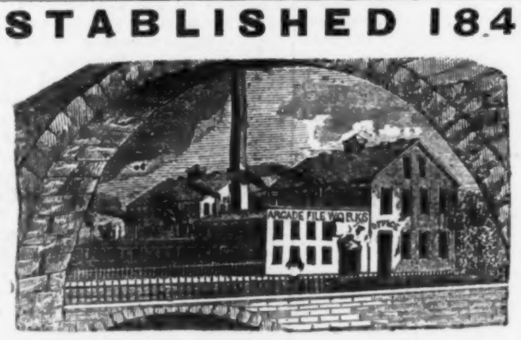

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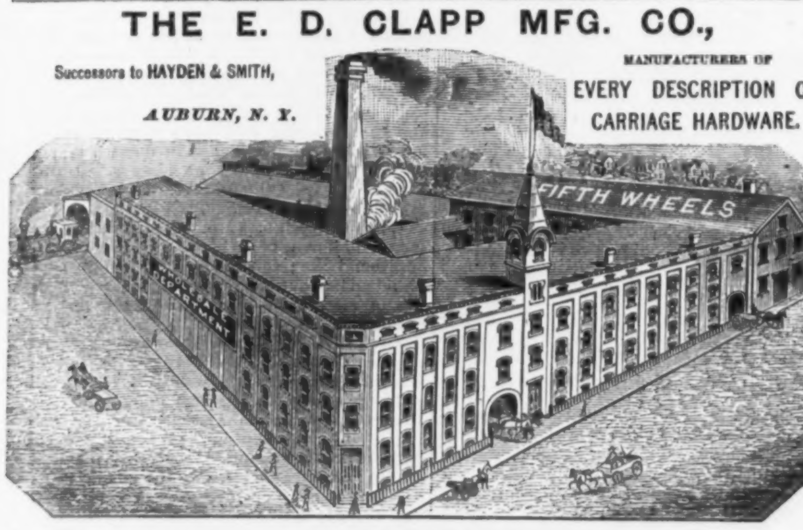

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Flat Wood,
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Half-Round,
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Hand Equaling,
Handsaw Blunt,
Handsaw (Double-Ender),
Handsaw Taper, single cut,
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High Back,
Hook-Tooth,
Knife,
Knife Blunt,
Lead Float,
Lightning,
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Mill,
Mill Blunt,
Mill Pointing,
Pillar,
Pitsaw,
Reaper,
Roller,
Round,
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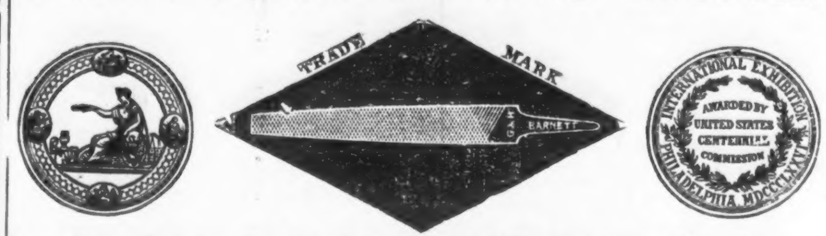

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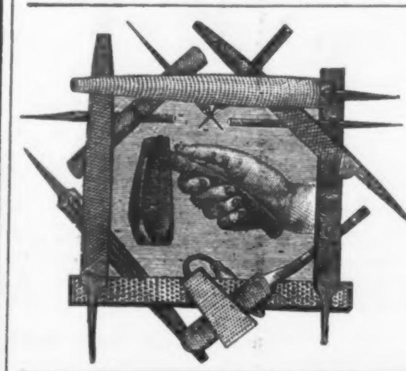

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The Growth of Railroads.

We take the following interesting article from the New York Daily *Bulletin*:

On the 15th of last month, Manchester and Liverpool had a grand celebration, or jubilee, commemorative of the commencement, 50 years ago, of the first railway between the two cities. Even in this country, familiar as we are with the rapid development of the railway system from year to year, it is difficult to realize that it is only within the memory of men who are still a decade on the sunny side of three score that mankind have had the advantage of it. With the locomotive a new era came in, from which modern material progress and all that constitutes the elements of an advancing civilization in both hemispheres takes date. And yet, when one reverts to the prejudices and opposition which the originators of the system had to encounter from a variety of local interests, ignorantly apprehensive of its operations and effects upon trade and commerce and the facilitating of social and business intercourse, one marvels at the short-sightedness and the narrow-mindedness which so frequently move men to stand in the way of movements which are calculated to ultimately benefit not only themselves, but the race at large. Perhaps no man ever had a more discouraging experience in this respect than Mr. Edward Pease, the originator of the Stockton and Darlington Railroad, which preceded the Manchester and Liverpool undertaking. A periodical, published more than 30 years ago, spoke of "the endless resistance he had to encounter; the hostility of antagonists, the cold support of friends, the vexatious obstacles, the absurd objections, the doubts of some, the prejudice of others, and the ignorance of all." At that time trade and commerce between Manchester and the seaboard were carried on chiefly by a very inadequate canal system, and during the winter months transit was often blocked by ice for weeks together: while in the summer time the low state of water frequently interfered with the rapid transit of goods. Yet, notwithstanding this, the opponents of the railroad carried their case into Parliament, and fought it step by step there. The *Railway News* specifies some of the more amusing allegations that were urged against the undertaking. Thus:

"The introduction of steam engines was to subject human beings to endless tortures. Not only supposed travelers, but the general public, would suffer from the intense noise, while life and limb would be endangered. The air, it was calculated, would be vitiated and kill the birds; cows would cease to give milk; farm produce would be rendered unmarketable; and last, not least, the race of horses would be extirpated. The London and provincial press chimed in with the general outcry. The merits of steam-power might delude for a short time, but it must ultimately end in mortifying all concerned. Exposed to sneers and satire, the bill fell through in Parliament after a discussion in committee whose sitting spread over 37 days."

Nevertheless, on the 6th of October, 1829, the trial took place which decided the future of George Stephenson in selecting his engine as the locomotive power to be used; and, finally, on the 15th of September, 1830, the railway between Manchester and Liverpool was officially opened, and from that day to this it has been working out results which have put human prejudice and ignorance to the blush. Instead of ruin to any interest, there are unspeakable advantages to all; and now, after a lapse of 50 years, an undertaking which was to ruin financially all concerned in it has expanded into a magnificent system, in which some £720,000,000 British capital is invested, and which has spread an iron network of nearly 18,000 miles over the United Kingdom, over which are annually transported between 5,000,000 and 6,000,000 passengers and from 200,000,000 to 220,000,000 tons of produce and merchandise.

On the Continent, singular to say, it was slow and unprogressive. Austria was the first to look upon the new system with positive favor. In Germany, the first railway was heard of in Bavaria, and in France nothing of importance was accomplished until some years subsequently. When the first line was proposed, from Paris to Versailles, it is on record that even so far-seeing and enlightened a statesman as M. Thiers spoke of the enterprise as but "an expensive plaything" that "had no future." This was on a par with the memorable prediction of our own Dr. Lardner, that the application of steam to ocean navigation was simply an impossibility. The progress which the system subsequently made will be seen by a reference to the following figures, giving the respective lengths of lines in English miles:

	1840.	1850.	1860.	1870.	1880.
Austria	295	1,391	3,205	6,063	11,500
Belgium	207	530	1,053	1,862	2,400
Germany	265	1,861	5,863	10,933	19,000
France	291	3,637	6,887	11,594	17,000
Great Britain	838	6,621	10,433	15,145	18,000
Holland	10	111	241	992	1,300
Italy	5	265	1,118	3,810	5,000
Russia		373	987	6,983	15,000
Spain		17	1,024	3,289	3,800
Switzerland		17	681	900	1,700
All other States	18	109	756	3,893	8,600
Total Europe	1,928	114,932	32,248	65,466	102,700

At the Liverpool and Manchester commemoration, the marvelous progress of the United States in developing the system was freely recognized. For that matter, the London *Railway News*, from which we compile these statistics, goes so far as to admit that while Great Britain is ahead of all other countries in extending and bringing it to its present perfection, "we are outstripped in some respects on the American Continent, where in many places the railroad precedes and supersedes public roads." The comparison of growth between Europe and America is given by decades in this form:

	1840.	1850.	1860.	1870.	1880.
Europe	1,928	14,932	32,248	65,466	102,700
United States	3,319	8,589	30,923	54,335	88,000

The capital at present invested in these 190,000 miles of railway is roughly estimated at a sum exceeding £4,000,000,000, of which £3,000,000,000 is credited to Europe and £1,000,000,000 to the United States.

Impressive as these statistics are, in one sense, he who does not look beyond them as from cause to effect, can have very inadequate conception of the overshadowing influence which this comparatively new factor in modern civilization and modern progress is coming to exercise upon all the complex interests of society and the State. It is already a controlling financial and commercial element; and, what is more, it promises to become in the future a dominating and political influence, as occasion may arise, in shaping the policies of the State and Federal governments; and this, too, without especial reference to the welfare or the wishes of the people if these stand in its way. Indeed, it is not too much to say that the most colossal power in this country today is the railroad power. The public can change their civil rulers as often as they please and bring the government into harmony with the popular will, but this is a power which occupies a sphere wholly its own. It is a law unto itself, while nominally subject to the laws of the land. The public can make or unmake presidents, governors, judges, mayors, but what people have it in their power to remove the railroad monarch, or the railroad monarchs? The time is coming when the dominating powers of the railroad interest must compel such a revision of its relations to the State and the community as will remove the existing tendency to a misuse or perversion of those powers, while carefully abstaining from such legislative meddling—for the sake of meddling—as will check the healthy development of the system. That revision, it must be borne in mind, touches the business interests of the country too nearly to be roughly handled. It will not do for the noisy demagogue to attempt it. It is pre-eminently the work of the statesman and the political economist; and if the signs of the times do not mislead, we are persuaded it will not be long before, in deference to an irresistible public opinion, they must enter upon it.

John Wilson's Knives and Steels.

The *Ironmonger*, of London, prints the following description of an old and important industry which will interest very many of our readers:

We have had an opportunity of going over the works of the old and well-known house of John Wilson, who has so long and successfully been engaged in the manufacture of butchers' knives, butchers' steels, and shoe knives; and whose products, carrying the trade-mark, "four peppercorns and a diamond," have found their way to almost all, if not all, the commercial markets of the world. The celebrity of the productions of this house commands for them a steady sale in this country; they are very largely exported to the United States and Canada; are in increasing demand in Australia, Germany, and Russia; and make their way in fair quantities to Africa and the East and West Indies. Experience has unfortunately shown that it is no uncommon occurrence for old and once distinguished houses to be superseded by others of younger growth, and recede into desuetude and decay; but such is not the case with the house now under notice. It not only possesses vitality, and is able to hold its own, but in its own special line of business it is prosecuting its vocation with a vigor and a success greatly in advance of its earlier years. Originated in 1750, and leaving competition with inferior and low-priced goods to others, it has steadily and perseveringly pursued its own fixed principle of sending out none but goods of the highest class quality at fair renumerative rates, and, extraordinary as it may and probably will appear, all through recent years of continuous and almost universal and unprecedented bad trade, the sales of this house have gradually increased, until, at the present time, they have assumed considerably larger proportions than they have ever reached in the whole course of its history. This is a great deal to be able to say, and the house whose experience it is may fairly be congratulated upon it. The reason for this satisfactory state of things is not far to seek. The whole secret is embodied in the words "excellence of quality." It cannot be price, for much lower-priced goods are sold. Some say the mark has a great deal to do with it; undoubtedly it has, but the reputation of the mark has been made solely by its representing good quality; and if the quality were not jealously and watchfully maintained, the mark would not long hold its justly acquired repute. Every article, we are assured, of John Wilson's manufacture is produced from the best class of steel, and quality and adaptedness are the first objects sought; cost is of secondary consideration. All steel intended for use in his manufactory is selected by thoroughly experienced and practical hands, under the most rigid supervision. After passing through certain special processes of manipulation, it is submitted to that of "shearing," and is made into what is technically termed "double-shear" steel, from which are made all of John Wilson's butchers' and shoe knives. His butchers' steels are made from cast steel specially prepared. The following brief description will convey some idea of the care which is exercised in the production of John Wilson's knives: The blades having been forged by skilled workmen under strict supervision, they are hardened and tempered by others, whose sole duty it is to attend to this special and very important department, instead of being left to the forgers when making, as is commonly done. The blades being thus hardened and tempered, pass under the inspection of another workman, whose duty it is to examine them carefully, with a view of detecting any that may have been a little under or over tempered, and to lay out any that are not right in this or other respects. The blades are then in a fit state to go into the hands of the grinders, and on being returned by them are again submitted to a further examination, and any faulty ones, from imperfect grinding or other cause, are rejected. Then follows the process of hafting, and having thus become knives, each knife separately undergoes another and final scrutiny prior to being wrapped up and sent out. These works find employment for a large staff of workmen in the various branches, from some of whom I was pleased to learn, in course of a conversation with them, that the whole of the hands have had full and constant

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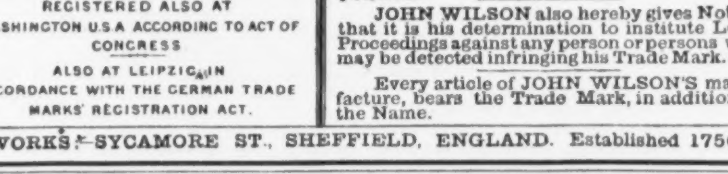
It having come to the knowledge of JOHN WILSON that Counterfeit Butchers' Knives, purporting to be of his manufacture, are being sold in the United States, he hereby cautions all purchasers of his Knives and Steels to be on the alert against such imposition.

JOHN WILSON also hereby gives Notice, that it is his determination to institute Legal Proceedings against any person or persons who may be detected infringing his Trade Mark.

Every article of JOHN WILSON'S manufacture, bears the Trade Mark, in addition to the Name.

WORKS: SYCAMORE ST., SHEFFIELD, ENGLAND. Established 1750.



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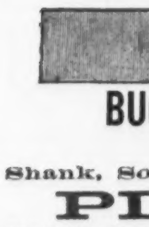
CAUTION.—Buyers should be on their guard and not have inferior goods palmed on them by unprincipled persons, who represent them as our make. Our tools are stamped "BUCK BROTHERS," and our labels have on our trade-mark, also "Riverlin Works."

Bemis & Call Hardware & Tool Co.



This Wrench can be furnished with Briggs' Pat. Nut or Sleeve.

PATENT COMBINATION WRENCH.

These Wrenches are made from the best of Wrought Iron, with Steel Head and Jaw, case-hardened throughout, and not only combine all of the superior qualities of our Cylinder or Gas Pipe Wrenches, but also all requisite Combinations of a regular Nut Wrench, thus making a combination which has no equal.

For Circulars and Price List, address

BEMIS & CALL HARDWARE & TOOL CO., Springfield, Mass.

THE SECURITY BLIND FAST CO.,

Manufacturers of

PAT. BLIND FASTS, WROUGHT IRON BLIND HINGES, WINDOW SPRINGS

Contracts for Hardware Specialties (wrought and malleable iron) executed promptly. Correspondence solicited with and estimates furnished to responsible parties.

19 Calender Street, Providence, R. I.

G. W. Bradley's Edge Tools.

Butchers' Cleavers,	Ring Bush Hooks,
Butchers' Choppers,	Ax Eye Bush Hooks,
Axes and Hatchets,	Socket Bush Hooks,
Grub Hoes and Mattocks,	Watt's Ship Carpenters' Tools,
Mill Picks,	Carpenters' Drawing Knives,
Box Chisels and Scrapers,	Coopers' and Turpentine Tools.

FOR SALE BY

MARTIN DOSCHER, Agent, 85 Chambers Street, N. Y.

Cutlery.

ALFRED H. HILDICK,

12 Warren St., N. Y.,

Importer of CHAINS, ANVILS, VISES, &c.

Agency of HILL BROTHERS & CO., WALSALL, ENGLAND

GENERAL HARDWARE MERCHANTS,

And of

BALL'S PAT. SOLID STEEL SHEEP SHEARS.

These shears are unsurpassed for cheapness, durability and utility. They are made of one solid piece of steel from point to point, and cannot be broken in use either in the bow or at the junction of the shank and blade. Samples can be seen at above address, or sample lots furnished.

CORPORATE MARK,

* ✠

Joseph Rodgers & Sons'

(LIMITED)

CELEBRATED CUTLERY,

No. 82 Chambers Street, New York.

F. & W. CLATWORTHY, Agents.

The demand for Joseph Rodgers & Sons' productions having considerably increased, they have, in order to meet it, greatly extended their Manufacturing Premises and Steam power.

To distinguish Articles of Joseph Rodgers & Sons' Manufacture, please to see that they bear their Corporate Mark.

P. O. Box 3960.

ESTABLISHED 1836.

Alfred Field & Co.,

COMMISSION MERCHANTS,

New York, Birmingham, Sheffield, Liverpool.

Guns and Pocket Cutlery,

SPECIALTIES.

Headquarters for

ELEYS BROS.' GOODS, WRIGHT'S ANVILS,
WILSON'S BUTCHER KNIVES, &c.
WOSTENHOLM'S POCKET CUTLERY AND RAZORS.
BUTCHER'S FILES, TOOLS AND RAZORS,
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CHESTERMAN'S TAPES,
GERMAN COIL AND HALTERS and other CHAINS,
BRADES' TROWELS AND HOES,
CANASTOTA KNIFE CO.'S POCKET KNIVES.
Etc., Etc., Etc., Etc.

All sorts of Hardware and Merchandise for import and export purchased on commission.

ROBERT SORBY & SONS,

SHEFFIELD,

MANUFACTURERS OF THE CELEBRATED

Kangaroo Sheep Shears,

The best Shears made.

Every Shears Guaranteed.

ALFRED FIELD & CO.,

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Send for price list and terms.

Cutlery.

French Clippers

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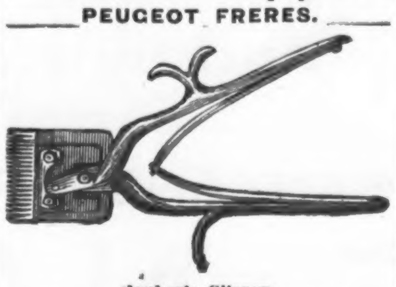
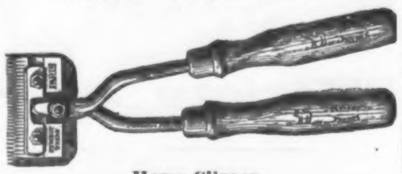


Barber's Clipper.

We are sole agents for these Clippers. All orders should be addressed to us to obtain lowest prices.

McCOY & SANDERS,

132 Duane St., New York.



Horse Clipper.

Silver Medal, 1878—Paris.

J. R. SPENCER & SON,

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MANUFACTURERS OF

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STEEL,

Table Knives, Razors, Shovels, &c., &c., of every description.

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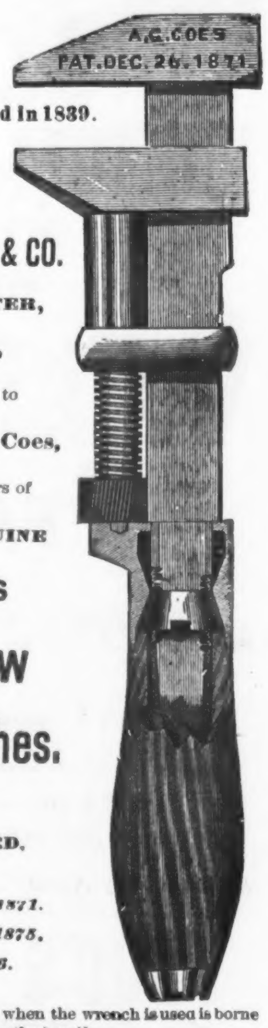
Granted 1749.

Manufactured by COPELAND, HALL & Co. Rochester, N. Y.

Coulter, Flagler & Co., Sole New York City Agents.



Established in 1839.

A. G. COES & CO.

WORCESTER, MASS.,

Successors to

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Manufacturers of

THE GENUINE

COES

Screw Wrenches.

PATENTED,

May 2, 1871.
December 26, 1871.
December 28, 1875.
August 1, 1876.

The backstrain when the wrench is used is borne by the bar—not by the handle.

The strongest Wrench made, and the only successful Re-enforced Bar.

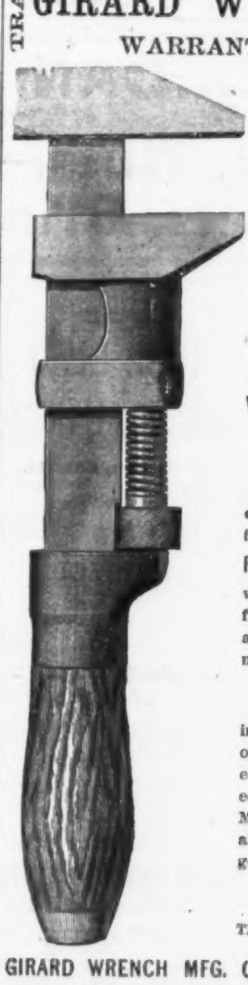
None genuine unless stamped

A. G. COES & CO.,

Our Agents, GRAHAM & HAINES, 113 Chambers St., New York, carry a full line of our goods, and will be pleased to serve you at factory prices.

TRADE STANDARD GIRARD WRENCH. MARK.

WARRANTED.



FOR STRENGTH AND Durability IT HAS NO SUPERIOR.

GUARANTEED IN EVERY RESPECT.

Wrought Bar, Head and Screw.

Owing to the increased demand for these justly Popular Wrenches, we are now manufacturing more than any other establishment in the world.

Our Wrench having been imitated by other manufacturers, we have adopted the above Trade Mark, and will hereafter stamp all our goods.

SEND FOR TERMS and PRICES.

GIRARD WRENCH MFG. CO., Girard, Pa.

THE MERIT OF

MARTIN'S PATENT CASTER

SECURES STEADILY INCREASING SALES.

GIVE US SAMPLE ORDER AND YOU WILL BE THEIR FAST FRIEND.

☞ Send for Illustrated Catalogue.

PHOENIX CASTER CO.,

Indianapolis, Ind.

Send for Circular and Discounts to the Trade.

Wrought Iron Adjustable Stove Truck,

MANUFACTURED BY

TUCKER ALARM TILL CO., Indianapolis, Ind.

MOUNTED: One end on Martin's Patent Caster—the other on rigid wheel. Runs straight in narrow isle.

ONLY ONE SIZE FOR ALL STOVES.

Retail Price, $2.75.

☞ IT IS A DAISY.

Packed Six in a Case. Painted Black.

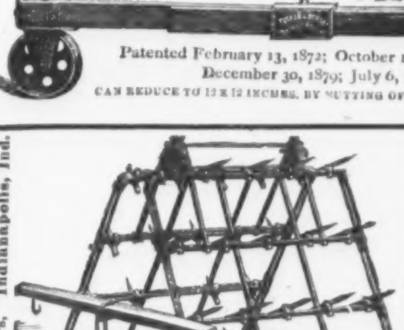
Patented February 13, 1872; October 1, 1875; July 1, 1879; December 30, 1879; July 6, 1880.

CAN REDUCE TO 12 X 12 INCHES, BY CUTTING OFF SIDE BARS.

Rogers' Duplex Harrow.

M. E. BUNGER & CO.,

Manufacturers, Indianapolis, Ind.

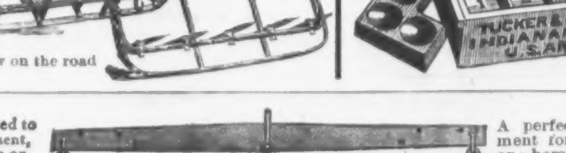


Harrow on the road

We make Till either for Coin or Scrip.

Can be applied to any implement, either with or without tongue.

A perfect attachment for either 2 or 3 horses.



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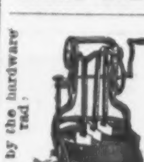
M. E. Bunger & Co., Indianapolis, Ind. Makers.

A perfect Double Tree
A perfect Equalizer
A perfect Stretcher.

The best selling implement in America. Just the thing for fall plowing.



"DRAW CUT" BUTCHERS' MACHINES.

Choppers, Hand and Power Stuffers, Lard Presses.

Warranted thoroughly made and the BEST IN USE.

MURRAY IRON WORKS, Burlington, Iowa.

Sold by the hardware trad.

GEO. M. EDDY & CO.,

Manufacturers of

Measuring Tapes

Of Cotton, Linen & Steel.

FOR ALL PURPOSES.

351 to 353 Classon Ave., Brooklyn, N. Y.

CHAS. E. LITTLE,

59 Fulton St., New York,

Pump-Log and Tubing Augers and Fittings,

And Agent for

Barnes' Wood-Working Machinery and Lathes,

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Kimball's Foot-Power Band Saw.

work for many years past; and that though the general trade of the town and country has been sorely and continuously bad, they have personally felt nothing of it. To this it may be added that throughout the severe depression, when reduction in wages has been the order of the day, the proprietor of these works has attempted no diminution in the rate of wages. Under such advantageous circumstances, it will excite no surprise to to learn that the workmen are well conducted and contented, and that the happiest feeling prevails between them, the management and their employer.

METALLURGICAL NOTES.

THE STETEFELDT AND THE HOWELL DESULPHURIZING FURNACES.

Among the furnaces which have during the last decade found frequent use in the Rocky Mountain mining regions for desulphurizing or chlorinizing rebellious silver ores, are the Stetefeldt and the Howell. In the former, the powdered ore is showered down through a shaft; in the latter, it is exposed to an elevated temperature in a revolving cylinder. In both an auxiliary fireplace is added to complete the roasting. Mr. C. A. Stetefeldt, a well-known mining engineer of the Pacific Coast, and inventor of the furnace bearing his name, has recently written a pamphlet on the comparative merits of the two furnaces. Mr. Stetefeldt naturally is biased in favor of his own apparatus, but his work deserves notice because he has laid before the public a series of experiments made at the Ontario Mill, Utah, with both furnaces, under particularly favorable circumstances for a comparison. In speaking upon the principal points involved, he claims for his furnace that its greater cost is solely due to the superior and substantial manner in which he builds it; that, therefore, it is not owing to the employment of any expensive devices, &c. The fuel consumption of the Stetefeldt is less than that of the Howell by about 1¼ to 1⅓ cords of wood per 24 hours at the Ontario Mill, a fact which, it is claimed, is due to the circumstance that the Howell furnace requires power to revolve the cylinders, which besides offers 500 square feet more of radiating surface. The main question, however, is which pressure extracts the highest percentage of silver, and it is to the solution of this problem that Mr. Stetefeldt has contributed data of considerable value. Both furnaces were fed with the same ore and largely at the same time, and daily assays were made to control their working. The results of these observations have been laid down by Mr. Stetefeldt in a series of interesting tables, the averages of which we print below:

	I.	II.	III.	IV.	V.
	S.	S.	H.	S.	H.
Battery sample assay	$109.44	$121.89	$122.80	$114.79	$114.79
Percentage of salt	18.95	18.35	18.1	17.5	17.5
Hence, value of raw ore	$133.05	$149.24	$150.07	$137.10	$137.10
Car-sample roasted ore	$104.35	$114.72	$109.20	$107.15	$94.37
Percentage of soluble salts	27.15	26.6	23.2	26.3	25.8
Hence, value of roasted ore after leaching	$143.33	$156.24	$142.30	$145.49	$126.88
Tailings from settlers	$12.62	$12.62	$11.18	$13.30	$13.19
Relative value of roasted and leached ore, calling value of raw ore 1000	1061.	1047.	945.	1061.	930.
Percentage of value in tailings	8.8	8.	7.8	9.2	10.3

In this table the work is given of:

I. New Stetefeldt for 20 days, first run.
II. New Stetefeldt for 20 days, second run.
III. Howell for a full run (16 days).
IV. Old Stetefeldt, 6 days at half capacity.
V. Howell, on same ore, 6 days at half capacity.

According to these experiments the Howell furnace leaves a less percentage of value in the tailings in one case, but at the same time the amount extracted is less. The Stetefeldt shaft, in round figures, roasts only 30 per cent.; the Howell cylinder, 60 per cent. of the whole ore, the remainder being roasted by the respective auxiliary fire-places. The roasted ore from each furnace, after amalgamation, leaves tailings of nearly the same value, and no marked difference can be observed in the fineness of the bullion produced. Hence, the inference that the roasting in both furnaces produces the same changes in the mineral portion of the ore. However, by examining the average samples of the roasted ore, some striking differences become apparent. 1. They present, on the whole, a marked difference in solubility. This is easily accounted for by the fact that, in the ore roasted by the auxiliary fire, a much larger percentage of sulphate of soda is formed than in the shaft. Since in the Stetefeldt Furnace twice as much ore is roasted by the auxiliary fire as in the Howell, it follows that the average of roasted ore from the Stetefeldt must contain more sulphate of soda than that from the Howell, and consequently, a marked difference in solubility is the result. Besides, the Howell cylinder is a better volatilizer than the Stetefeldt shaft. 2. In denuding the roasted ore, in each case, of its soluble salts, we arrive at a residuum which alone bears a direct reference to, and permits comparison with, the original raw ore without salt. In ascertaining the assay value of this residuum, it is found that, in the case of the Stetefeldt Furnace, it is much higher, and in the case of the Howell Furnace it is considerably lower, than the assay value of the raw ore from which it resulted. The only conclusion which can be drawn from this fact is that the difference is due to a difference in volatilization of silver.

Pig Iron Overproduction in Great Britain.

The London *Economist* of September 25th has the following:

The course of the iron trade during the past twelve months has been so eccentric and startling as to demand some investigation into the causes of the state of things we have witnessed and the results which are likely to follow.

It was in September of last year that the American inquiry, which has been gradually making itself felt to those in the trade, first attracted public attention, and this demand continued in increasing volume for at least six months thereafter. At first the demand was the legitimate outcome of the healthy condition of trade in the United States, which encouraged buyers to replenish their stocks at the low prices then ruling; but, later on, speculators added their orders to those of the ordinary dealers in iron, and so the volume of trade was increased far beyond all legitimate bounds, and severe reaction and loss was the natural consequence.

Notwithstanding the cancelments of several large contracts, the total shipments of iron and steel of all kinds between 1st September, 1879, and 31st August, 1880, reached the enormous total of 1,623,333 tons, as against 260,573 tons in the 12 months immediately preceding. The largest shipment to the United States in any previous year was in 1871, when 1,036,829 tons were exported; but there was a most remarkable contrast, as will be seen from the following figures, the enormous proportion of raw materials, such as pig iron, old rails, scrap, &c., being very marked in later shipments:

SHIPMENTS OF IRON TO THE UNITED STATES.

	1871. Tons.	1879-81. Tons.
Pig iron	190,183	779,373
Old rails, scrap, &c	109,815	329,122
New rails	512,277	190,566
Tin plates	86,929	169,410
Bar, hoops, sheet iron, wire, steel, &c	137,625	163,862
Total	1,036,829	1,623,333

This unhealthy development of demand could not but be injurious to the best interests of the trade, stimulating as it did production and prices to an unnatural extent, only to be followed by reaction and depression.

The fluctuations in values will best illustrate this, and we take Scotch warrants as being the best register of prices. In July, 1879, they were quoted at 40/, but advanced to 70/6 by February, 1880, then rapidly declining to 44/4½ by May, and afterward advancing to 56/, from which there has been a rapid fall to 49/.

To meet the large and urgent demand from America, there was a very considerable increase of production in all the different districts of the country, and it is somewhat remarkable that, with the exception of Scotland (and there only as the result of the late strike), little, if any, reduction has been made since the falling away of the American demand.

According to a carefully prepared return made by the proprietors of *Roland's Iron Trade Circular* in March, 1880, there were then 601 furnaces in blast, as against 458 in November, 1879.

According to *Hunt's Statistics*, just published, the production of 1879 was, as near as possible, 6,000,000 tons, and as this was the year of greatest depression, it is not improbable that the present production is equal to 7,500,000 tons per annum.

This statement may be further illustrated by taking the districts of Middlesbrough and Scotland, from which we have well authenticated returns. The average monthly production of the former district was 150,000 tons in 1879—so far in 1880 it has been 203,500 tons. In Scotland the average number of furnaces in blast was 88 in 1879—so far this year it has been 108. The increase in these two districts alone, therefore, is equal to 72,000 tons per month, or 864,000 tons per annum.

The facts above stated explain what otherwise would appear unaccountable, that this enormous extra demand has been met without any visible inroad upon existing stocks. There may have been some slight reduction in Cumberland, Staffordshire and Lincolnshire, but little change has taken place in Cleveland and Scotland. In the North of England, stocks on the 1st of September, 1879, were 319,403 tons, and on 1st September, 1880, 273,476 tons. The stock in Connal's store at Glasgow increased from 300,733 tons on 1st September, 1879, to 467,130 tons by 1st September, 1880; but it is supposed that the quantity in makers' hands was reduced to about the same extent, and the present stock is estimated at about 700,000 tons; so that as near as possible 1,000,000 tons are lying in reserve in these two districts.

It would appear from the Board of Trade Returns that there was but little improvement in the exports to countries other than the United States during the course of the last twelve months, but this may be explained by the unsettled state of the trade and high prices. Since the return, however, to moderate prices there are evidences of more inquiry from other countries, and shipments are improving, though slowly, as the following figures will show:

TOTAL SHIPMENTS OF IRON AND STEEL FROM SEPT. 1 TO AUGUST 31.

	1878-9. Tons.	1879-80. Tons.
	2,449,780	3,892,316
To United States	260,573	1,623,333
Other countries	2,189,207	2,268,983

Increase, 79,776 tons in 12 months.

TOTAL SHIPMENTS FROM JAN. 1 TO AUGUST 31, 1879-80.

	1879. Tons.	1880. Tons.
	1,693,053	2,705,485
To United States	201,635	1,117,550
	1,491,418	1,587,935

Increase, 96,517 tons in 8 months.

What then are the conclusions to be drawn from the above facts?

It appears abundantly manifest that the production of pig iron has been unduly stim-

H. D. SMITH & CO.,

Plantsville, Conn.,

Manufacturers of the

BEST QUALITY CARRIAGE MAKERS' HARDWARE.

Manufacture the Largest Variety of Forged Carriage Irons of Best Material and Workmanship.

PRICES LOW FOR QUALITY OF WORK FURNISHED.

SEND FOR PRICE LIST.

SARANAC HORSE NAIL CO.

Polished or Blued Horse Nails, Hammered and Finished.

The Saranac Nails are hammered hot and the finishing and pointing are done cold. Quality is fully guaranteed. For sale by all leading iron and hardware houses.

S. P. BOWEN, President and Treasurer. **PLATTSBURG, N. Y.** J. W. LYNDE, Secretary.

ELY & WILLIAMS, Gen'l Agents for Eastern and Middle States, 1232 Market St., Philadelphia; 178½ Water St., New York; 36 Oliver Street, Boston. S. H. & E. Y MOORE, Gen'l Agents for Western States, 163 and 165 Lake Street, Chicago, Ill. SAM'L G. B. COOK & CO., Agents for Southern States, Nos. 67 and 69 (old Nos. 5 and 7) German Street, Baltimore, Md.

SARANAC HORSE NAILS,
Blued or Polished.
Terms, Cash, within 60 Days.

Nos.	5	6	7	8	9	10
Cts.	26	22	21	20	19	18

THE UNION METALLIC CARTRIDGE COMPANY,

Bridgeport, Conn.

GUN WADS.

We desire to impress upon the trade the **Fact** that **Black** and **Pink Edge Gun Wads,** now manufactured by us, are **Unequaled in Quality,** and afford jobbers a larger **Margin of Profit** than the **Imported.**

CENTRAL FIRE WATER-PROOF PERCUSSION CAPS,

BRASS & PAPER SHOT SHELLS, PRIMERS, &c.

Agents: HARTLEY & GRAHAM, New York.

Union Manufacturing Company,

Sole Manufacturers of

SKINNER'S PATENT COMBINATION CHUCK. Universal, Independent and Eccentric.

Fig. 1.—Front View.

Fig. 2.—Back View.

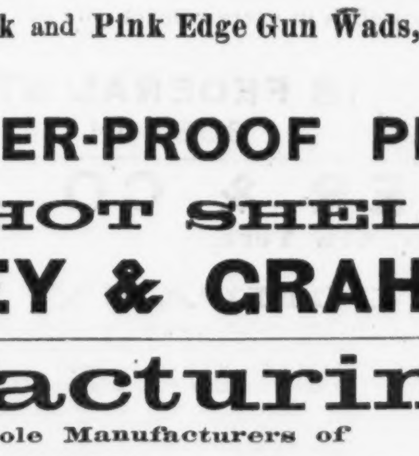

Fig. 3.—Front Plate.

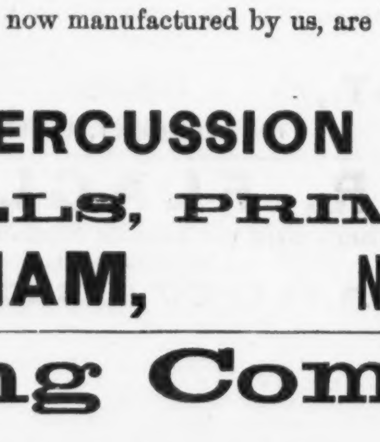

Fig. 4.—Back Plate.

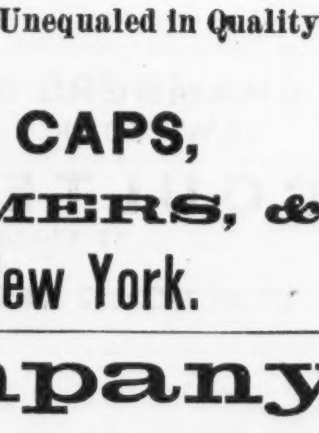

Fig. 7.—Patent Jaw.

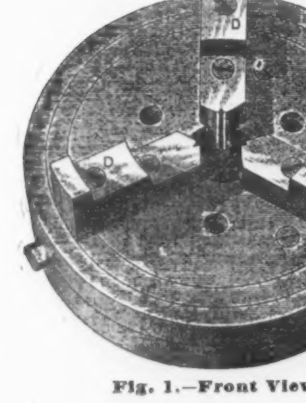

Fig. 5.—Cam Ring.

This Chuck is Universal, Independent and Eccentric, and was patented June 24 and November 18, 1879.

We are determined that this Chuck shall be the best in the market. Believing that our customers do not want an inferior article, and with the improvements, as shown in the cuts, we have no hesitation in saying **Ours is the Best Chuck Manufactured, and we Guarantee Every Chuck of this make perfect in every respect.**

All parts will be made interchangeable, and in case repairs become necessary, we can furnish the part needed without the chuck being returned to us, saving much time and expense, especially on **Goods sold out of the country.**

By sliding the Stud C (Fig. 2) the Chuck can instantly be changed from Universal to Independent, and *vice versa.*

Whenever, by use or from any cause, the faces of the jaws are found out of true, the several faces in the different jaws, which should be in the same plane, can be readily adjusted by screwing out the screws D D D (Fig. 1) until the projecting heads are in the same plane, at right angles to the axis.

Please send for full descriptive circular and prices.

UNION MFG. CO., New Britain, Conn.

Warehouse, 96 Chambers Street, New York.

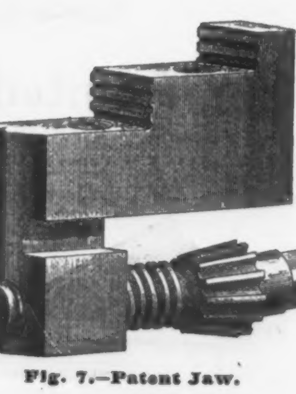

Fig. 6.—Circular Rack.

ulated by the American demand, and now that the American orders are about all completed, the weight of production is being felt, and the course of prices during the last week appears to give confirmation to this conclusion.

Although it is reasonable to look for a gradual extension of trade, both at home and abroad, under the improved conditions which now exist, still some little time must be allowed for this demand to manifest itself, and meanwhile it is not improbable that this overproduction will have to be restrained.

Advices from Scotland seem to indicate that there will be some reduction in that quarter, and now that Middlesbrough is producing such an enormous quantity, the competition of that district is likely to be felt all over England, and will no doubt compel the blowing out of furnaces less favorably situated for making cheap iron, so that in time we may look for the production and consumption being more nearly balanced than at present.

Until this is reached, the position of the iron trade cannot be pronounced satisfactory, although the present condition of things may lead to the cheapening of production and exceptionally low prices for a time.

The Reading Companies.

Mr. J. W. Jones, an ex-Vice President of the Philadelphia and Reading Railroad, has published the following letter, which will be read with much interest:

To the Stockholders, Bondholders and Creditors of the Philadelphia and Reading Railroad Company: If the report be true that the London committee of bondholders assert that the stock and junior issue of bonds must be assessed, I respectfully submit to your consideration whether the time has not arrived when it is imperative for you to take some measures to protect your property.

It is not true that there is any necessity for an assessment, and I appeal to you to examine the figures below and judge for yourselves, and not allow a committee of gentlemen, necessarily ignorant of the inner workings of your company, to confiscate your property without an effort on your part to save it, for, in the cases of thousands of small holders, assessment means confiscation. This is too obvious for any argument:

The capital stock of the Railroad Company is		$34,278,175
The old mortgages, the consolidated, improvement and general mortgage bonds amount to		53,239,500
The Coal Company divisional bonds amount to		12,638,000
		$65,877,500
The bonds and mortgages on real estate amount to (Railroad Company, $1,916,253; Coal Company, $896,234)		2,812,487
		$68,689,987
The annual interest on these is		4,384,721
The debenture, convertible and income bonds and scrip of the Railroad Company	$19,846,719	
The debenture bonds of the Coal Company	1,731,000	21,577,719
The floating debt amounts to, say		15,000,000

Suppose you—1. Convert the income, debenture and convertable bonds and scrip into second preferred stock, bearing 5 per cent. interest, if earned.

2. Issue $15,000,000 of first preferred stock, with which to retire the floating debt.

3. Scale the coal company mortgage bonds $200,000 per annum, which can possibly be done by consent of holders; if not, then by forclosure.

The case would then stand as follows:

Take, first, results under the present management:

The gross receipts of the railroad company for nine months ending August 31, as published, are		$12,446,702
Gross expenses, including rentals of leased roads, &c. (76¾ per cent.)		9,528,245
Net profits		$2,918,457
Add net profits for September estimated		1,000,000
Add net profits for October estimated		750,000
Add net profits for November estimated		600,000
Net profits for 1880		$5,268,457
Which will pay the interest on		
1st, the old mortgage bonds of $5,573,500		$360,930
2d, the consolidated bonds of	18,616,000	1,223,450
3d, the improvement bonds of	9,364,000	561,840
4th, the general mortgage bonds of $19,686,000		1,181,160
5th, interest on the divisional coal land bonds, and on bonds and mortgages on real estate		942,366
6th, the interest on bonds and mortgages, real estate (railroad)		114,975
7th, the 6 per cent. on $15,000,000 of new first preferred stock		900,000
Total		$5,284,721

That is, the company under its present extravagant management is earning the interest on all the mortgage bonds (except the income) of both railroad and coal company, and a dividend of 6 per cent. on the $15,000,000 of first preferred stock. The mining operations of the company are about paying expenses.

But, secondly, suppose the road were worked as economically as other similar roads, the result would be about as follows:

Say 50 per cent., 13¾ per cent. for rentals of leased lines, &c.; total 63¾, instead of 76¾ per cent. of the gross receipts:

Gross receipts for nine months, as above	$12,446,703
Gross expenses, say 63¾ per cent	7,903,656
Net profit	$4,543,047
Add net profit for September on above basis	1,300,000
Add net profit for October on above basis	850,000
Add net profit for November on above basis	675,000
Total net profit for year	$7,368,047
This will pay:	
1st, the interest on all mortgage bonds, and on bonds and mortgages on real estate of both companies	$4,184,721
2d, a dividend of 6 per cent. on $15,000,000 of first preferred stock	900,000
3d, a dividend of 5 per cent. on the second preferred stock	1,078,886
4th, a dividend of 3 per cent. on the common stock	1,028,345
Total	$7,191,952

The surplus would meet any probable liability for interest on guaranteed bonds of the iron company, &c. If it be questioned that this result is possible, I answer, it has been done, and there is no reason why it cannot be done again, and even better results obtained, after the road and rolling stock are put in first-class condition.

The average ratio of expenses for five successive years (1861 to 1865, both inclusive), less rentals, was 46 7-10 per cent.

Year.	Ratio. Per cent.	Receipts per ton of coal.
1861	49⅛	$1.28 2-10
1862	43 7-10	1.24 6-10
1863	42 2-10	1.59 6-10
1864	46 8-10	2.15
1865	51 3-10	2.79 1-10

If it be true that the stocks owned by the company of roads controlled and leased by them are pledged as collateral for a portion of the floating debt, it is of prime importance that this debt should first be provided for. The loss of control of valuable feeders would be disastrous, and I submit that the simplest and easiest way to provide for the floating debt is to issue a first preferred stock, and give the holders of the common stock the privilege of taking it at par. It is worth par, and the present earnings are sufficient to pay 6 per cent. dividend upon it. The balance of the floating debt is presumed to be secured by a pledge of income and general mortgage bonds, but as it would be suicidal to increase the annual interest charge of the company, these bonds should be cancelled.

This paper is published at the earnest request of gentlemen largely interested pecuniarily. Very respectfully,

J. W. JONES,
Ex-Vice-President P. & R. Railroad Co.
PHILADELPHIA, Oct. 9, 1880.

Business Enterprise in Postal Service.

The steamship City of Sydney, carrying the Australian mails, left the port of Sydney on September 9, and after an extraordinarily rapid voyage arrived at San Francisco 48 hours ahead of schedule time, but too late for that day's train eastward on the Central Pacific Railroad. Having been immediately notified of the arrival of the steamship at San Francisco, Postmaster James was very anxious to have her mails reach the steamship Arizona, which sailed at noon on Tuesday last for Queenstown. On the 7th inst. he called upon Mr. Sidney Dillon, president of the Union Pacific Railroad, with whom he found Mr. Towne, of San Francisco, the general superintendent of the Central Pacific Railroad, and Mr. Clarke, of Omaha, the general manager of the Union Pacific road. Postmaster James, having laid the matter before Mr. Dillon, the latter turned to Mr. Towne and asked, "Where is the passenger train that left San Francisco on October 6?" The reply was, "It is on the Humboldt division." "Then," said Mr. Dillon, "telegraph to put on a special, take the mail and overtake the train that left San Francisco on the 6th." "Why," interposed Mr. Clarke, "we shall have to run 1000 miles at an expense of over $1000 to overtake that train." "Never mind," replied Mr. Dillon, "put on the special." Having been thus assured of hearty co-operation in his praiseworthy design, Postmaster James lost no time in sending a dispatch to Mr. William B. Thompson, General Railway Mail Superintendent at Washington, making him acquainted with the arrangements.

Superintendent Thompson accordingly gave instructions to the postal clerks along the route, as well as to the postmasters at Omaha, Chicago and Pittsburgh, to facilitate by every means in their power the dispatch of the Australian mail. That the officials alluded to were on the alert was soon manifest. On the 9th inst. Postmaster James received a telegram from Postmaster Thomas F. Hall, at Omaha, setting forth that the Australian mails had arrived there and had been dispatched in the train which left Omaha at a quarter to five o'clock on that date. From Chicago, Superintendent James F. White, of the railway mail service, telegraphed to Postmaster James on the 10th inst. that 243 sacks of foreign mail matter had been forwarded from there at 10 minutes to four p. m. on that day *via* Pittsburgh. The next dispatch, bearing date of the 11th, was sent by Mr. Cunningham, the local postal agent at Pittsburgh, to his chief, R. C. Jackson, superintendent of the railway mail service division, in this city. This set forth that the foreign mail arrived at Pittsburgh by train No. 6, on the Pittsburgh and Fort Wayne Railroad, at half-past seven a. m. Monday morning, and was forwarded by train No. 8, on the Pennsylvania Railroad, at 15 minutes to nine a. m. The latter train arrived at Jersey City about 10 o'clock Monday evening, and the British mail duly transferred to the steamship Arizona on Tuesday morning. It is expected that the latter will make the trip to Queenstown in seven days, thus making the time from Sidney to London about 41 days. According to the last report of the Postmaster-General of New Zealand, the average time consumed in the voyage from Sydney *via* San Francisco has been 45 days and about six hours, and by way of the Suez Canal 46 days and about four hours. It will, therefore, be seen that the City of Sydney has reduced the time of the voyage nearly four and one-half days.

An old idea has turned up in a new form at Kiel, Germany, where a trial was made recently with a so-called "hydro-motor ship," built after the plans of Dr. Fleischer, of Leipzig. The vessel, which is 17 feet beam, 110 feet long, 5½ feet draft and 100 tons burden, made 10 knots an hour. She is propelled by the force of hydraulic reaction, without the aid of either paddles or screw. The water passes into a reservoir in the hold through holes in the bottom, and is thence pumped out and emptied into the sea by a centrifugal pump worked by the ship's engine, the discharge of water propelling the vessel. The engine discharged 5000 gallons per minute, and is said to have furnished a stronger propelling power than screw or paddle, while the motion was without jar and as gentle as sailing. The ship could be stopped, backed or turned instantly, so as to be free from all danger of collision. Indeed, a vessel thus propelled, it is stated, can be made to revolve in a circle about its own axis.

The Iron Age

AND

Metallurgical Review.

New York, Thursday, October 14, 1880.

DAVID WILLIAMS - - *Publisher and Proprietor.*
JAMES C. BAYLES - - - *Editor.*
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It is asserted that the railroads—those great obstructors to all advance—are the inspiration of all the objections to the Panama Canal. It is even charged that Mr. Nimmo's report on this subject is written in the interests of the railroads, and that his statements are willfully incomplete and favorable to them. We do not think the railroads of this country are much concerned at the prospect of the undertaking to build the Panama Canal, not to speak of its building; and if they are, it is a useless trouble. The steel on the track of the Pacific roads will be worn out several times by the heavy traffic and renewed before the canal will be built. The new enterprises that are pushing westward at the present time to the Pacific show that capitalists have little fear of its being built, or, if built, that it will interfere seriously with their revenues. If it be true that La Société Générale, of Paris, has become a member of the Canadian Pacific syndicate, it will also show that even in de Lesseps' home there is some skepticism as to his project.

Fire Inspection in Factories.

Precautions for the prevention of fires and for the prompt suppression of incipient conflagration, are the best kind of insurance. There may be times when a manufacturer would rather "sell his shop and 'stock to the underwriters'" than not; but, ordinarily, no amount of insurance which a man can get will compensate him for the loss of his works, for the destruction of drawings and patterns and templets and records, or for the interruption to his business which a serious fire causes. The advantage of precautions against fire, and of adequate provision for dealing with it when it makes its appearance, is more generally appreciated now than it was a few years ago, and perhaps these precautions would become quite general if the underwriters should make it an object to manufacturers to do what they can to avert the danger of loss. We have lately had our attention called to the admirable system adopted by the Yale Lock Company, at Stamford, Conn., to protect their property. But the mere provision of means will not count for much without that "eternal vigilance" which is the price of safety. To devise a good system of protection is easy enough; but to insure that this system shall at all times be in perfect working order is not so easy. The managers of the Yale Lock Company have organized a thorough weekly inspection of their premises, reports of which are made to the inspectors on blanks attached to printed instructions. We give below the text of these instructions, with the form of blank used by the inspectors:

INSTRUCTIONS FOR INSPECTION OF FIRE APPARATUS.—YALE LOCK MANUFACTURING COMPANY, STAMFORD, CONN.

Each inspection is to cover the entire premises of the company.

1. The inspector will examine every hose connection, move every hose valve or cock and see that the hose is properly connected and readily accessible for use. Also see that every fire bucket is filled with water, and that each fire lantern is filled, trimmed and ready for use.

2. The inspector will carefully examine the surroundings of every steam boiler, stove and heater, to see that no inflammable materials are near them, that all smoke and flue connections are tight, stove pipes well secured, and everything safe.

3. The inspector will carefully follow the line of every steam pipe, throughout its whole length, to see that it is not in contact with wood, and that no waste or other inflammable materials are near it. In summer this need apply only to such pipes as are then in use. In winter all steam pipes must be so inspected. Any leaks in pipes or valves are to be immediately reported to the superintendent.

4. The inspector will carefully examine spaces beneath all work-benches and tables, and will remove therefrom any inflammable materials he may find. All cases of carelessness which he may note in this inspection to be promptly reported.

5. The inspector will particularly examine all places where oils, varnish, alcohol, lacquer, japan, &c., are stored, to see that every precaution is taken against fire. He will also inspect every receptacle for dirty waste, to see that it is in proper order and place.

6. The inspector will note the condition of the yards, and see that no accumulation of inflammable materials occurs near any of the buildings.

7. Once monthly the inspector will carefully examine every chimney used for fires, to see that its joints are tight, particularly near the roof or other woodwork, and that no inflammable dirt is collected near it.

8. Once each month the inspector will take down and uncoil every fire hose, leaving it extended over night and replacing it properly the next day. In doing this he will note the condition of the hose and see particularly that it is not becoming cracked or injured by the method of hanging or otherwise. All defects in hose to be promptly reported to the superintendent.

REPORT.

To the Superintendent:
I have to report that on........
I made a thorough inspection, in accordance with the above instructions.
I found the instructions numbered..................
..........to have been properly complied with, and everything in the place and condition designated.
I found violations of the instructions numbered..............
I report the following matters as needing attention, viz.:
....
....
I make the following suggestions for the better protection of the property, viz.:
....
....
.... Inspector.

With such an inspection as the above instructions call for, made weekly by competent persons, there is little chance that any cause of danger will remain unnoticed. There is not much that is mysterious about fires. They seldom occur from causes which would not have been recognized as dangerous had they been looked after. It is only when fire has done its work and destroyed the sources of its origin that the mystery begins. In fire protection no system can be devised which, once set in motion, will "run itself." Carelessness is inevitable; but while it cannot be prevented, it can always be detected and corrected by a competent man who has this for his duty. We commend the Yale Lock Company's inspection system to the favorable consideration of manufacturers in all departments of industry, believing that, if generally employed, it would save a vast amount of very valuable property every year.

Some genius with a taste for statistics has been figuring out the consumption of oil arising from the torch-light processions that are now so common in the land. He estimates that an average of 100,000 men, each with a torch, are in line each night for at least 30 nights in the year about presidential election time. Each torch holds a pint, and the 100,000 men would need 100,000 pints of oil, or 12,500 gallons a night, or 375,000 gallons for the season. Now, if some one would figure out the tin and wicks and wood, what an aggregate these torch lights would make.

Norway as a Freight Carrier.

Any one reading attentively the daily arrivals and departures of vessels at New York or any other American seaport, cannot have failed to be struck by the number carrying the Scandinavian flags — Norwegian and Swedish. The Norwegian government has just published statistics of navigation under the Norwegian flag in 1878, and the figures, especially those having reference to the carrying trade under it from the United States to Europe—England in particular—in sailing vessels, are so remarkable, disclosing such an enormous increase, that we think it worth while going into details.

The merchant fleet of Norway increased in 1878, 33,600 tons, and at the close of that year consisted of 7942 sailing vessels and 306 steamers. The former measured, in the aggregate, 1,475,105 tons, and the latter 51,674 tons. The sailing-vessel tonnage was, therefore, about 88 per cent., and that of steamers 12 per cent. The proportion of the latter is, consequently, an exceedingly small one. In Finland it is 11 per cent.; in Greece, 17 per cent.; in Italy, 22 per cent.; in England, 72 per cent.; and in other European countries about 50 per cent. This shows at a glance that the great strength and advantages possessed by Norway as a carrier lie in her cheap and well-built sailing vessels—and, indeed, while steam gradually supersedes sail nearly everywhere else, the Norwegian flag prospers while floating over sailing vessels, and these steadily increase. Their main sustenance seems to be drawn from the American trade.

While sailing vessels in the five years 1873–77 increased from 1,183,027 tons to 1,475,015, steamers rose from 41,166 to 51,674; both, therefore, showed an increase of 25 per cent. During the preceding five years sailing vessels had increased 29 per cent. and steamers 285 per cent. This goes to prove that the large increase of steamers between 1869 and 1873 was the result of transient causes, because the trade with near-by countries demanded it, but that for transatlantic navigation sailing vessels are preferred by the Norwegians, and therefore increase.

The gross amount of freight earned by Norwegian craft in 1878, in the trade with foreign ports, amounted to 95,279,500 crowns, the crown being worth about 26 cents of our money, against 98,444,000 crowns in 1877 and 103,000,000 crowns in 1876, the average of the five years (1873–77) being 101,000,000 crowns; but of these amounts the trade between Norway and foreign countries only produced 18,000,000 crowns on freights, and that between foreign countries 77,000,000 crowns; in 1877 the proportion was 21,000,000 and 77,000,000, and in 1876, 20,000,000 and 83,000,000.

In 1878 the export of produce from the United States alone gave the Norwegian flag 34,733,000 crowns from freights, against 25,000,000 in 1877, and 17,000,000 in 1876; in other words, the gross earnings from this source alone doubled in two years. Adding thereto 6,624,000 crowns from Canada, and 2,000,000 crowns from Central America and the West Indies, and the freight from Europe to America, and it will be found that the entire Americo-European traffic alone earned for the Norwegians 45,000,000 crowns in 1878 out of the 95,279,500 earned in the trade with and between foreign nations.

The general theory that steam is bound to eventually supersede sailing-vessel navigation, does not seem to hold good as regards Norway at least. Norway is a country covered with thick forests, which grow even on the precipitous slopes of her rough coast; the timber is excellent, and easily transported to the shipyards. The population is mostly devoted for the past two thousand years to fishing and navigation; there is an abundance of hardy and able seafaring men—captains, officers and crews. Agricultural and industrial pursuits are of comparative insignificance in this great marine country, although the Gulf Stream tempers the climate, and the long summer days admit even the growing of wheat to some extent. But marine pursuits are the life of Norway, and nearly all the vessels are owned on small shares, of which nearly everybody who possesses anything is a holder. The same relates to fishing, also largely carried on in the same manner. The captain being interested, and possessing the free disposal of chartering and navigating his vessel on strictly economical principles, it is not surprising that the Norwegian flag should have a large share of the world's carrying trade. The same rules which underlie the maritime prosperity of Norway prevailed in the ports of our Eastern States at a time when manufacturing industry did not yet absorb the enterprise, capital and labor it does at present.

Under these circumstances it seems to us easily explained why our own prominence as builders and navigators of sailing vessels has been, and is, on the decline, while that of Norway, on the contrary, rises. It appears to be plain enough that, in competing with Norway in sailing vessels, we and other nations find it at times difficult or impossible to make money, where the Norwegian skipper clears a living profit.

Pittsburgh's White Elephant.

The Pitttsburgh pumping engines, after unnumbered breakdowns and repairs, have at last actually worked long enough to make a test. The mechanical engineer has made the test and reported upon it. The following are the chief points as given by the Pittsburgh papers:

Engines Nos. 1 and 2 have been working very satisfactorily during the past three months. Two small cracks have been discovered in the cylinder head of No. 2, which can be repaired when the work on No. 3 is completed. During the month 25,186 bushels of coal have been delivered at the works. The engines have worked 283 hours, pumping to the reservoir 279,585,000 gallons of water, making an average of 9,319,500 gallons per day. On Saturday, September 25, the engines pumped 13,851,000 gallons, and on the following morning there was no increase in the quantity of water at the reservoir, showing there is more water drawn from the reservoir one day than another. In order to test at what speed the engines would work the most economical, a trial was made on September 25. They were worked at 6⅔ revolutions per minute for 13½ hours, raising to the reservoir 13,851,000 gallons, consuming 1075 bushels of coal. A second trial was made September 28, at a speed of 8 1-9 revolutions per minute, raising to the reservoir 14,445,000 gallons, and consuming 1015 bushels of coal, demonstrating that the higher the speed the more water is pumped and the less fuel consumed

The quantity of water pumped at the average speed of the engines is remarkably small, considering their size and cost. Ten thousand dollars worth of steam pumps, taken at list price from makers' catalogues, would do as much work, and it is a question whether they could not show as great a measure of economy. The difference in the interest account would certainly buy the fuel for the cheaper pumps, and show a large surplus for a sinking fund. We quote again:

Owing to the inferior material used in the construction of the engines, however, the engineer does not deem it safe to run the engines to their full capacity—10 revolutions per minute. In his report the mechanical engineer recites the action of the court in the suit of Hartupee *vs.* the city, closing as follows: "While I am not dissatisfied with the result of the trial, I would have been gratified to have been permitted to have given to the court my reasons for refusing to give an estimate on the work done by Mr. Hartupee. I was acting as an umpire between Mr. Hartupee and the city, and as such I was in duty bound to see justice done on either side, and it is with pride (and I hope a pardonable one) that I state that the honorable judges of our courts have sustained me in all my actions."

Mr. Lowry seems to have made out a case against Mr. Hartupee on the ground of inferior material, but we fancy that no metal in the known world would stand under the extraordinary strains entailed by the designs of these engines. Mr. Lowry's action, which seems to give him so much satisfaction, was practically that of a most interested umpire, since if Mr. Hartupee was not beaten Mr. Lowry would have stood condemned, in a most unpleasant manner, for designing engines which could not be built and give satisfaction, even by day's work.

After hearing elaborate evidence and reaching a proper frame of mind for passing judgment, the coroner's jury of the Hudson River Tunnel disaster has given to the world its verdict as to who is responsible for that calamity. The result is characteristic of the whole system. Instead of making an attempt to arrive at an intelligent opinion concerning the causes of the disaster, and with the aid of opinions thus formed point out who could possibly have been responsible, the jury distinctly and emphatically exonerate the conductors of the enterprise. Conscious, possibly, of their inability to do what they are called upon to perform, the jurymen seldom venture the opinion that any one is to blame for something which they do not understand. After profound study of evidence relating to the tunnel, they arrive at the conclusion that nobody is to blame, and if anybody is free from a shadow of fault, it is the responsible head of the enterprise and "the promoters," whoever they may be. We have no wish to enter into the merits of the case, nor have we any desire to intimate that those constituting the coroner's jury in this special instance deserve any blame. They are no better and no worse than coroners' juries in general, and their verdict is only noted as one more in the long list which proves how utterly inefficient and valueless the present system is. The contrast is striking between our examinations of such disasters and those instituted in England, where the jury are assisted by government officials of the highest professional standing. Though the English system is not by any means perfect, and it would not do to take it as a model, it is far superior to our own, which calls for a thorough and comprehensive reform. Our coroner's-jury system is probably equal to dealing satisfactorily with the question of how a man who was killed in a street fight came to his death, especially when it is positively known who struck or shot him; but when it comes to wholesale slaughter by a boiler explosion, a steamboat disaster, a railroad smash-up or an accident to some piece of engineering work, they are simply confused by the conflicting testimony, and illustrate in their verdicts the wisdom of Dogberry.

We should suppose there would be no difficulty in devising and maintaining a system of signals so perfect that collisions on our elevated railroads would be practically impossible. In the absence of such precautionary measures such accidents are becoming unpleasantly frequent, and we may reasonably expect that before very long we shall have one so destructive to life and limb as to create a popular feeling against these roads. This is a matter which properly calls for the notice of the Grand Jury. It is wrong to require a railroad company to do anything it cannot do, but any necessary thing which it can do and will not, it should be promptly required to do. The individual citizen is in no position to defend his own interests in such matters. True, he may refuse to ride on the elevated roads if he considers them unsafe or badly managed, but they are built for public convenience, and every citizen has not only the right to to use them, but the right to demand that in the enjoyment of the facilities they offer him for rapid transit he shall be protected against every known and recognized cause of danger.

We print in another column an interesting statistical article from the London *Economist* on the present overproduction of pig iron in Great Britain. The transient and speculative demand from this country, first felt in September, 1879, was not understood at the time and gave an unnatural impetus to production, and there are now 601 furnaces in blast, as compared with 458 in November, 1879. The production of 1879 was 6,000,000 tons; the present production is at the rate of 7,500,000 tons per annum. As American contracts are filled and closed and no new orders are coming, or can reasonably be expected to come, production will have to be considerably curtailed and furnaces blown out all over the country. What a godsend an American "tariff for revenue only" would be to the British iron trade just now. But as they cannot expect to get this, under any circumstances, much, if any, before 1882, and as they cannot by any means be sure of it even then, they are likely to accept the unpleasant fact of overproduction and depression. Statistics show that the late "revival" in Great Britain rested on a very slender foundation, since there was no important increase in the demand from any other country than this. But the most significant figures, as showing the present condition of Great Britain, are the statistics of the estimated home consumption of iron. They are as follows for a series of years:

Year.	Tons.	Year.	Tons.
1870	3,091,202	1875	3,824,848
1871	3,671,974	1876	4,030,244
1872	3,680,870	1877	3,818,665
1873	3,644,437	1878	3,776,237
1874	3,543,574	1879	3,309,567

These estimates, which we find in *Ryland's*, show that the home consumption of iron was less in 1879 than in any year since 1870. The exports in 1879 were also less than in any year since 1870.

The fever of railroad building appears to have taken hold of the Mexican people, the more progressive and enlightened of the citizens of our neighboring republic doing all within their power to further schemes now actually being carried out or in contemplation. The majority of the enterprises now on foot are largely, and in some cases exclusively, conducted and controlled by American capital and engineers, and, naturally, considerable benefit is derived from them directly by manufacturers in this country. Important though this fact may be for the moment, it is insignificant when compared with the advantages likely to accrue to them if the vast territory of Mexico is rendered more productive and opened to commerce in an intelligent manner. American manufacturers have, therefore, a deep interest in the success of the establishment of a net of Mexican railways, and there are some reasons which encourage the belief that the building of the lines will be free from some of the errors which have burdened the development of the system in other countries, and notably in Brazil. In the latter country much money has been wasted and a heavy debt incurred by the want of an intelligent development. The local governments of the provinces, which had a controlling voice in the matter, were more intent upon petty present advantages, which they were incapable of sacrificing to the general interests of the country. This has given the railway system of Brazil a disjointed character, which is a severe drawback upon her present prosperity and future development. These mistakes, it seems, are not being repeated in Mexico. The plans are comprehensive and their execution is in the hands of a few large and powerful corporations, who are not likely to waste their substance in lines of minor importance before the main highways of travel are secured.

We print elsewhere a translation of a paper by M. J. Kraft, chief engineer of the Seraing Works, Belgium, and this paper, we may say, enjoys the unique distinction of being the first contribution of its kind to metallurgical literature. M. Kraft's computations concerning the consumption of steam in rolling steel rails are by no means as complete and as full as they might be, but he touches upon a subject which ought to receive thorough investigation at the hands of our engineers. It is claimed for some of the modern types of American rolling mill engines, that they are far superior to those used only a few years ago. These claims ought to be substantiated by a series of tests, showing the power actually developed, by taking indicator diagrams, and the amount of water evaporated in the boilers

with a specified quantity of fuel. There is another class of machinery to which engineers are more and more turning attention, with a view of securing increased efficiency and economy. It is not long since it was distinctly stated, at a meeting of mining engineers, that the field in blast furnace management in which substantial progress was still obtainable was in blowing engines. The limit of fuel economy in smelting iron in the furnace proper, according to all appearances, is being rapidly reached; but a considerable margin still remains in the con struction and management of the machinery for supplying modern blast furnaces with the enormous volume of air they are now using.

The business stagnation, due to the political excitement of the time, is becoming more general, and is now almost absolute in the iron trade. Experienced men in the trade agree that there can be no stability in prices and no confidence until after election, and that iron will then be firm with an upward tendency, or two dollars a ton lower, according as the election shall go. There is unquestionably a general feeling of disquietude in business circles, undoubtedly growing out of the fear that the stability of protection hinges on the results of the election; and while the tariff issue was not made prominent in the canvas, it has gradually increased in popular interest, and may have great weight in determining the result. Meanwhile, very little iron is likely to change hands, but the reaction after the election is likely to compensate in some degree for present dullness, unless the excitement is prolonged by some difficulty growing out of the count, as was the case in 1876.

Since those who represent the shipowning interest of the United States do not want free ships, this would seem to be a good time to drop the discussion whether our navigation laws should or should not be repealed. That those who have any pecuniary interest in the shipping business do not, as a class, want free ships, has been decided by the National Convention of Shipowners at Boston. Not only was the free-ship resolution defeated overwhelmingly, after an exhaustive and dispassionate discussion, but it is an interesting fact that many who had previously advocated the repeal of our navigation laws put themselves squarely on record as opposed to any such change in our national policy. The shipbuilders, on the other hand, ask for no bounties nor bonuses; but both owners and builders agree that a small tonnage bounty to shipowners would give an impetus to our shipping interests, and both unite in demanding the repeal of the law which requires every steamship to carry the ocean mails for a nominal consideration, while railroads and river or coasting steamboats may refuse to carry the mails unless the compensation is satisfactory. They also agree in recommending the removal of many of the taxes and charges now imposed on American shipping, but very few who have any interest at stake want a change in the law which requires American ships to be built of American materials in American yards.

The wonderful increase in railroad earning, which has been a subject of so much comment both at home and abroad, shows no falling off such as was apprehended in September. Grain has been moved in small quantities, owing to the low price, but general freight has more than held its own. Many roads still report themselves as unable to meet the demands for cars made upon them by shippers, and they also find it well-nigh impossible to get cars from car makers.

Charters have been granted for the construction of the two marginal or belt railroads at Pittsburgh of which we made mention in these columns some weeks ago. These charters show that one—the Pittsburgh and Allegheny River Railroad—runs from the Point to Sharpsburg Bridge, on the south bank of the Allegheny River. The Pittsburgh Local Railroad Company will start in the Ninth ward, somewhere in the neighborhood of the Shoenberger Mill; run along the south bank of the Allegheny River to the Point; up the Monongahela to Grant street or to the B. & O. depot; cross the Monongahela to the South Side and along the south bank of the Monongahela to the city limits. Any one acquainted with the topography of Pittsburgh and the location of its mills, will see at once the great advantage of these roads to the iron industry.

The Balloon in Warfare.—A practical experiment in ballooning has been applied by the English Military Balloon Committee. One of the service balloons, such as would be employed for the ascent of one or two persons, was inflated and sent up captive to a hight of about 800 feet, and at a distance of about 2900 yards from a battery furnished with one of the new 8-inch howitzers. The gunners in charge of the howitzers were directed to find the range and fire at the balloon. The first shot was unsuccessful, but, by correcting the elevation by the experience which it afforded, the second 8-inch shell was aimed and fired so deftly that it burst just in front of the balloon. Being a shrapnel shell, which contained some 300 bullets, and weighing in all 180 lb., the fragments were cast forward by the burst in a spreading cone, and a number of them penetrated the envelope of the balloon, lacerating it to such an extent as to bring it down in quick time. The success of the experiment is regarded as merely proving that it will be unsafe to ascend in a war balloon within 2000 yards of the enemy's lines, and not as detracting from the value of the balloon as a military agent.

Cincinnati Exhibition Notes.

(From our Resident Correspondent.)

CINCINNATI, Oct. 11, 1880.

The Cincinnati Exposition closed last Saturday evening. During the past 15 days the attendance increased every day, and in the last week the halls and corridors of the vast building were literally crowded. The railroads entering the city have had during the month to bring every available coach and car into service, to accommodate the visitors and carry the immense freights of goods for exposition. Nearly half the States in the Union, besides several railroads, were represented creditably. The earnings of the Cincinnati, Hamilton and Dayton Railroad in the month amounted to $273,896.63, with much business yet to come in returning passengers and freight.

Many exhibitors of machinery sold their exhibits and took additional orders for more of the same kind

A number of the leading firms of the city agreed to suspend their work on Saturday afternoon and to send their employees to the exposition, with 25 cents each to pay admission fees. The amount received from this source alone reached the very creditable sum of $10,557. The additional stock of $150,000 has nearly all been subscribed for the new art museum, and it has become a fact that Cincinnati is to have an art museum at a cost of $300,000.

The following is an abstract of the list of awards of premiums at the eighth Cincinnati Exposition:

CLASS NO. 1.

Stationary motors and appurtenances, including engines operated by steam, air, gas or other motive power, excepting water and electricity.

Automatic cut-off stationary steam engine, gold medal, E. P. Allis, Milwaukee.

Stationary engine and boiler combined, for light work, under 15-horse power, silver medal, Cummings & Gray.

Gas engine for general use, silver medal, Slussor & Shuman.

Balanced slide valve for steam engines, silver medal, Robinson, Balance Slide Valve Company.

Single-seated pocket valve, premium recommended, H. F. Friske.

CLASS NO. 2.

Steam generators and appurtenances.

Steam pressure gauge, silver medal, Blake Steam Gauge, &c.

Heater and lime extractor combined, silver medal, E. L. Morse, St. Louis.

CLASS NO. 3.

Portable farm engines, silver medal, Marshall Graves & Co., Dayton, Ohio.

CLASS NO. 4.

Hydraulic machinery, including hand and steam pumps, hydraulic presses, water motors and machines for elevating and utilizing water for mechanical purposes.

Direct-acting steam pump, silver medal, M. Schultze.

Crank and fly-wheel pump, silver medal, John H. McGowan & Co.

Duplex steam pump, silver medal, Cope & Maxwell Manufacturing Company.

Double-acting light force pump for general purposes, silver medal, Laney & Baugher.

Fire hydrant, silver medal, Cummings & Gray.

Hydraulic gauge, silver medal, Blake Steam Gauge Company.

Hydraulic gate valve, silver medal, Cummings & Gray.

Tank valve, silver medal, John N. Poage.

Railroad water column, silver medal, John N. Poage.

Hydraulic elevator, silver medal, Warren Warner.

CLASS NO. 5.

Best shearing and punching machine, silver medal, Long & Alstatter Company, Hamilton, Ohio.

Best power hammer, silver medal, Bradley & Co., Syracuse, N. Y.

CLASS NO. 6.

Wood-working machinery, tools and appliances.

Band saw for lumber, gold medal, Cordesman, Egan & Co.

Hand saw for scroll work, silver medal, Bentel, Margedant & Co.

Reciprocating saw for scroll work, silver medal, Cordesman, Egan & Co.

Lathe for irregular forms, silver medal, Lane & Bodley.

Molding machine, straight, silver medal, Bentel, Margedant & Co.

Hub boxing machine, silver medal, Cordesman, Egan & Co.

Riding cross-cut sawing machine, silver medal, Farmers' Manufacturing Company.

Cross cut sawing machine, without riding attachment, silver medal, John Augspurger.

Box nailing machine, bronze medal, H. Messer.

Improved wood turning lathe, bronze medal, H. Weymuth.

CLASS NO. 7.

Printing and paper machinery, tools and appliances.

Type-casting machine, silver medal, Cincinnati Type Foundry.

Wire-sticking machine, silver medal, Chas. Carr.

CLASS NO. 9.

Pneumatic machinery, including pressure blowers, power fans, bellows, air pumps, &c.

Independent air pump and condenser, premium recommended, Edw. Reynolds.

CLASS NO. 10.—LAUNDRY MACHINERY.

Bronze medal to Mrs. S. Short for the best portable hot mangle.

Bronze medal to G. S. Blaney for best clothes-drying apparatus.

Silver medal to Joseph Smith and Home Street Machine Company for best washing machine.

Silver medal to A. M. Worcester for best clothes-wringing machine.

Jurors—H. H. Davis, T. W. Zimmermann, H. Brackenmann.

CLASS NO. 13.

Fire engines, fire-extinguishing apparatus and appliances, including life saving apparatus.

Fire escape, silver medal, Wm. Winkles.

CLASS NO. 15.

Best cider mill, silver medal, Keystone Mfg. Co., Sterling, Ill.

CLASS NO. 16.

Grain and flour conveyor, bronze medal, H. W. Caldwell.

Malt dryer, silver medal, Renner, Renner & Knight.

Assortment of mill tools, bronze medal, Robert Lytle.

CLASS NO. 17.

Best hand meat-chopping machine, bronze medal, W. N. Seibern & Co., Cincinnati.

Best power meat-chopping machine, bronze medal, Zimmerman Mfg. Co., Cincinnati.

Best differential pulley block, silver medal, E. Harrington & Son, Philadelphia.

Best emery-wheel machinery, bronze medal, Union Stone Co., Boston.

From Class 79:

Friction clutch pulley, bronze medal, Taper Sleeve Pulley Works, Erie, Pa.

Cotton-gin saw sharpener, silver medal, R. S. Mudford, Texarkana, Ark.

Power sheet shearing machine, silver medal, United States Shearer Co., Boston, Mass.

Sand-blast file-sharpening apparatus, bronze medal, Sand Blast Sharpening Co., Wilmington, Del.

Portable ice machine, bronze medal, O. G. Leopold, Cincinnati, Ohio.

Automatic windmill, honorable mention, Mast, Foos & Co., Springfield, Ohio.

CLASS NO. 21.

Crude minerals, metallic ores, &c.

No. 323.—Best display of iron ores from one State, silver medal, Pleumer & Bramwell, Cincinnati.

No. 321.—Mineralogical display, Gray & Bass, gold medal, Pleumer & Bramwell, agents, Cincinnati.

No. 323.—Display of iron ores, silver medal, Pennsylvania and Virginia Iron and Coal Company, Pleumer & Bramwell, agents.

CLASS NO. 22.

Pig and bar metals, and sheet metals.

No. 344.—Machine-made horse shoes, Wrought Steel Horse-shoe Manufacturing Company, Cincinnati, silver medal.

No. 345.—Hand-made horse shoes, Wm. Russell & Sons, Cincinnati, silver medal.

No. 334.—Plate steel for boilers, Mitchell, Tranter & Co., gold medal.

No. 346.—Horse-shoe bar iron, one end worked, Mitchell, Tranter & Co., Cincinnati, silver medal.

No. 343.—Display of iron and steel wire, Globe Rolling Mill Company, silver medal.

Thomas G. Smith, D. T. Woodrow and John L. Pfau, jurors.

The jurors recommend honorable mention for William Russell, Entry 1128, Class 79, horse-shoe nail.

Horse shoe nails, bronze medal, William Russell.

CLASS NO. 23.

Wire nails, silver medal, American Wire Nail Company.

CLASS 24.—METAL CASTINGS.

No. 372.—Assortment of common iron castings, silver medal, Sohn & Reichter, Hamilton, Ohio.

No. 376.—Ornamental wrought iron work, silver medal, Star Iron Works, Cincinnati.

No. 380.—Piano stool, bronze medal, Jas. L. Haven & Co.

CLASS NO 25.

Railway supplies, including track and appliances, car fittings, &c.

Display of railroad supplies, gold medal, Post & Co.

Passenger car lamp, silver medal, Post & Co.

Frog, silver medal, F. Weir.

Lifting jack, bronze medal, F. Deweese.

System block signals, gold medal, Union Electric Signal Company, Boston.

Switch signaling device, silver medal, Oscar Gassett.

Interlocking machine for railroad switches, silver medal, Harvey Tilden.

Jurors—Wm. Gaylor, W. S. Brewer, John S. Patterson.

CLASS NO. 30.

Assortment of pruning shears, silver medal, Ohio Manufacturing Company.

CLASS NO. 32.

Sheet metal roofing, silver medal, Horizontal Roofing Company.

Display of marble mantels, silver medal, W. P. Perkins.

CLASS NO. 36.

Manufactured sheet-metal goods.

Copper work, bronze medal, John Van & Co.

Machine-made metal pans, bronze medal, Charles Jackson.

Sheet brasswork, bronze medal, Manhattan Brass Company.

Zinc ornamental work, silver medal, A. Henren.

CLASS NO. 58.

Miscellaneous housefurnishing goods, refrigerators, water coolers, &c.

Refrigerator and water cooler combined, silver medal, J. W. Wayne.

Refrigerator, silver medal, J. W. Wayne.

Display of housefurnishing goods, silver medal, L. P. Ficks.

Enameled ironware, silver medal, St. Louis Stamping Company.

Coffee-making apparatus, silver medal, J. Van & Co.

Improvement in cooking utensils, silver medal, A. M. Worcester.

CLASS NO. 73.

Distilling apparatus, bronze medal, F. W. Leubing & Company.

Redistilling apparatus, bronze medal, F. W. Luebing & Company.

CLASS NO. 74.

Gas machine, bronze medal, Coleman Gas Machine Company.

Gas governor, bronze medal, Inter-State Gas Saving Company.

The Prescott Manufacturing Company, of Boston, Mass., exhibited a new and very simple device for hanging doors without the use of either trucks, rods, track or hinges. It is called "the truss hanger." It hangs the door in such a way that it may be moved edgewise as if hung upon rolls, yet no rolls are used, either at the top or bottom of the door. Two kinds of the hangers are made. The truss hanger is adapted especially for barn, stable, depot and storehouse doors, and can be used upon all sliding doors except when the width much exceeds the hight; in the latter case it can be used by making two doors, moving in opposite directions. It operates very easily and is not liable to get out of order. The other is called a "brace" hanger, and is used upon parlor and in public buildings, passenger coaches, or in any place where it is desirable to conceal the hinges entirely from view; and as the door is hung so as to rise a little as it moves back, it makes a tight joint upon the floor or carpet when closed, yet moves back without friction or wear. The brace hanger is made strong enough for any sized door and is especially adapted for box-car doors. The company have already introduced these hangers on several railroads and in many buildings, and the demand for them is said to be rapidly increasing.

One of the most interesting exhibits in Machinery Hall was that of Mr. E. L. Morse, of St. Louis—the Morse Feed-water Heater and Purifier. By its use the exhaust of steam engines is utilized in heating and purifying feed-water, thereby economizing greatly in fuel and protecting the boilers from incrustation. One of these heaters was used at the Exposition in connection with J. H. McGowan & Co.'s horizontal rival steam pump for supplying the boilers of the Exposition, both of which have received first premiums.

The St. Louis Stamping Company exhibited a very fine assortment of granite ironware at the Cincinnati Exposition this fall, combining some handsome new designs for dining-room service. Their display was handsomely arranged, and was very much admired by the crowds who stopped to examine it. Their entire catalogue of goods was represented in nests of various sizes.

The first premium in this class was awarded to the Giant Riding Saw Machine. Since the introduction of hand-sawing machines for cross-cutting logs, the first patent for which was issued December 6, 1870, very decided improvements have been made in their construction, and a reissue was granted in July, 1879. This reissue covers the actuating seat in combination with saw, lever and treadles. The first sawing machines of really practical value were introduced to the public a little over a year ago. The same is known as Bostwick's Giant Riding Saw Machine. Since the introduction of the riding-saw machine, several other machines for cross-cut sawing by one-man-power have been brought to notice, each possessing some degree of merit. The Giant Riding Saw Machine is an efficient and really useful labor-saving implement. It consists of an actuating seat and foot braces in combination with a saw lever, and is provided with a saw blade 5½ feet in length, having a stroke of 3½ feet. The saw is driven by motions of the body. The operator sits in a saddle, with his feet upon treadles and hands upon a lever, in an easy and natural position. The entire weight of the operator is brought to bear to aid the saw, giving it a double power, the principles of leverage employed affording the most perfect application of power. The saw cuts both ways. One man can operate it with great ease. The machine is made of the best seasoned ash, strongly put together with wrought-iron bolts and braces, and is very light. One man can take it on his shoulder and an ax in his hand and carry it to the timber with ease. One very decided advantage this saw has is that the work is straight before the operator, there being no side draft. With it logs can be sawed on a hillside, and the machine is so simple that any one of ordinary intelligence can operate it. This machine is manufactured by the Farmers' Manufacturing Company, at No. 178 Elm street, Cincinnati, and was awarded the first premium (a silver medal) by the Cincinnati Exposition this year. The company is quite busy at this time in supplying many orders, a number of which are from Europe.

A New Monster Ironclad.

The monster ironclad Italia, of 14,000 tons, has been successfully launched at Castellamare, Italy, in the presence of King Humbert and an immense crowd of people. The Italia is the most powerful ironclad ever constructed. She was begun three years ago, and will not be completed for a year or more to come She will be the largest and most powerful vessel of war afloat, and will soon be joined by her sister ship, the Lepanto, which is being built at Leghorn. Her principal dimensions are as follows: Length between perpendiculars, 400 feet 6 inches; breadth of beam at water line, 72 feet 9 inches; breadth of beam at upper deck, 65 feet 6 inches; draft of water forward, 25 feet 6 inches; draft of water aft, 30 feet 6 inches; displacement at load draft, 13,480 tons; length of armored tower, 96 feet; breadth of armored tower, 52 feet 9 inches; thickness of iron armor on tower, 21 inches; number of engines, 4 sets; number of cylinders, 12; number of propellers, 2; diameter of propellers, 19 feet 6 inches; number of boilers, 26; number of furnaces, 78; length of ship, fore and aft, occupied by engines, coal and boilers, 250 feet; weight of hull, 5000 tons; weight of armor, 2898 tons; weight of teak backing, 114 tons.

In the construction of the Italia the bold step has been taken of dispensing entirely with side armor; and the great guns, of which there are four Armstrong breech-loaders of 100 tons weight, are to be mounted on the upper deck in pairs *en barbette*, in a peculiarly placed armored casemate, so arranged as to permit a fire of the guns, either on a line with the keel, fore and aft, or in pairs on either beam, or toward any point of the compass.

The hull is of steel, the lines fore and aft being very fine, and is to be sheathed with wood. It is constructed with the usual double bottom, 3 feet 3 inches between the skins amidship and divided into numerous separate cells. Great strength is given to the structure by the bulkheads and decks. Two longitudinal water-tight bulkheads extend for the length of 254 feet 6 inches in the ship. These, together with the transverse bulkheads, divide the hull into 53 compartments, which are again subdivided horizontally by four water-tight decks. The first of these is the armored deck, 5 feet 6 inches below the water line at the sides of the ship and protected by 3 inches of iron or steel. This deck extends from stem to stern, and is incurvated at both extremities, meeting at the bow, the extreme point of the ram, and thus adding material strength where most needed in the event of ramming an enemy. Immediately above this armored or lowest deck is another 6 feet above the water line, constructed of thin iron or steel and covered with wood. The side compartments between this and the lower deck just named, which are divided into water-tight cells, are to be filled with cork, as in the Inflexible. On the third or battery deck, 14 feet above the water line, are to be carried 12 guns, the calibre of which will be moderate when compared with the great guns in the armored citadel, and the lighter metal of which will admit of rapid, continuous and concentrated fire.

Armor is only used to keep out shot and shell from the engines and boilers, the magazines, shell-room spaces, and the channels leading therefrom to the upper deck; and to protect the guns in the casemate when not elevated above the battery, and the gunners employed in firing them. But all other parts of the ship above the armored deck, all the guns not in the casement, and all persons out of the casemate and not below the armored deck will be exposed to the enemy's projectiles. Her engines will consist of two sets, of the three-cylinder vertical, inverted type, to each of the two screw propeller shafts, making twelve cylinders in all; and the steam will be supplied by 26 boilers; with three furnaces each. The cost of each of these ships, completed, exclusive of armament, is estimated at $3,834,540.

Professor Benjamin Peirce, of Harvard University, died on the 6th inst. He was the son of Benjamin Peirce, the librarian of Harvard University from 1826 to 1831, the year of his death. Benjamin Peirce, Sr., was the first scholar in the class of 1801, and for some years was a merchant at Salem, Mass. After his appointment as librarian he wrote a partial history of the University, bringing it down to the time of the Revolution. This work was published in 1833. Benjamin Peirce, Jr., was born at Salem, April 4, 1809, and was prepared for college under the instruction of Nathaniel Bowditch and at Andover. He entered Harvard in 1825, and immediately distinguished himself by his devotion to mathematics. He was graduated in 1829, and at once took a position as a teacher of mathematics in Round Hill School, at Northampton, Mass., then under the charge of Joseph G. Cogswell and George Bancroft. In 1831 Professor Peirce returned to Cambridge to fill the position of tutor in mathematics in the University. In 1833 he was made University Professor of Mathematics and Natural Philosophy, and in 1842 he became Perkins Professor of Astronomy and Mathematics. He held the latter position until 1867, aiding, in the meantime, in the construction of the observatory. In 1867 Professor Peirce was made Superintendent of the United States Coast Survey, and held the position for seven years. Since 1849 he had been a consulting astronomer to the *American Ephemeris and Nautical Almanac*, and for many years he directed the theoretical part of the work. In 1855 Professor Peirce was one of the men intrusted with the organization of the Dudley Observatory. For many years before and after he took charge of the Coast Survey he was consulted frequently in the work of the office.

A motion for a preliminary injunction was made before Judge Butler, recently, in the United States Circuit Court, Philadelphia, on behalf of the Chalmers Spence Patent Non-conducting Company, to restrain I. Newton Pierce and others from infringing the patent of complainant. The Chalmers Spence Company obtained a patent in 1874 for a covering for steam boilers and pipes, consisting of a wire frame surrounded by felt, an air chamber being left between the covering and the boiler or pipe. The defendant has a patent for a covering which he claims to be an improvement on the invention of the complainant, in which, instead of a wire covering and support for felt, Mr. Pierce uses a metal jacket having holes pierced in it. While the matter was under hearing it was stated that Judge McKennan had decided a case in which the question of infringement of the Chalmers Spence patent was involved, but not the validity of the patent itself, and at the suggestion of Judge Butler the hearing was suspended for the present, and the case was directed to be put on the list for the coming term of the Circuit Court, beginning on Monday next.

Judge Thayer, in the Philadelphia Common Pleas Court, recently rendered an opinion in the suit of the People's Bank against Edward J. Etting. The bank had advanced $18,500 on 1000 tons of pig iron, which was on storage upon Etting's wharf, at Callowhill street. The iron was the property of Henry G. Morris, and the money was borrowed from the bank by Morris' agent, Ervin, he at the same time giving to the bank certain receipts signed by Mr. Gayley, who was an employee of Mr. Etting. There have been two suits arising out of the transaction, both of them being adverse to the bank, which lost possession of the iron, and consequently lost their money. The case came before the court on a demurrer to the declaration of the plaintiff. The court stated that the plaintiff might amend, otherwise judgment would be entered for the defendants.

During the first seven months of the present year, 1,374,925 tons of iron ore were shipped from Bilbao to foreign countries.

Fire-Resisting Qualities of Building Stones.—Dr. Cutting, State Geologist of Vermont, has concluded a unique series of tests of building stones with reference to their fire-resisting qualities. He sums up the result in a recent number of the *Weekly Underwriter*. He declares, in substance, that no known natural stone deserves the name fireproof. Conglomerates and slates have "no capability" of withstanding heat; granite is injured beyond cheap or easy repair by even so mild a heat as that which melts lead; sandstones, including the variety called brown stone in this city, are better, and limestones and marbles are perhaps the best in this respect. But even they are injured by a continuous heat of 900 degrees, and at 1200 are changed into quicklime. Therefore it would seem that no stone buildings are fire-proof, and some of them, Dr. Cutting even says, are as much damaged by fire as wooden structures are. Brick, on the contrary, is usually uninjured, and is often rather improved by heat until it is melted. But as most brick buildings are trimmed with iron or stone, the damage is often considerable, even when the walls stand. To avoid this, Dr. Cutting recommends soap-stone trimmings, which are open only to the objection of expense. But although brick stands heat so well, it is objectionable, because its power to resist pressure from dampness or frost without crumbling is less than that of stone. Nevertheless, as brick is in fact only a kind of artificial stone, the search for an ideal building material is not hopeless, but it must be prosecuted rather by the maker than by the quarrier of stone.

Trade Report.

Office of The Iron Age,
Wednesday Evening, October 13, 1880.

During the past week the financial markets have been characterized by uncommon dullness—the political excitements of the hour having absorbed the attention of Wall street operators. Naturally, the effect of the Ohio and Indiana returns has been very marked, and there is much greater confidence manifested in the stability of values. The money market continues easy with 2 @ 3 % as the ruling rates on call loans.

Foreign exchange has been firm with an advance of half a cent per pound sterling, notwithstanding the fact that the specie importations for the week were $3,230,900, as compared with $3,586,421 for the corresponding week of last year. The importations since the 1st of January and since the 1st of August compare as follows with the movement during the corresponding periods last year:

	Since January 1: 1880.	1879.
Gold	$30,727,246	$41,380,131
Silver	4,041,384	6,475,585
Total	$36,768,630	$47,855,716
	Since August 1: 1880.	1879.
Gold	$30,772,879	$40,548,406
Silver	846,878	1,136,032
Total	$31,619,757	$41,684,438

The stock market has been strong during the week, but since the news from Ohio and Indiana has been received the market has become buoyant. From this it will be seen how the news is interpreted in financial circles and what expectations are based upon it. To-day business opened with great excitement and confusion, everybody manifesting an unusual anxiety to buy. United States 4 and 4½ % bonds opened at an advance of ⅞, and have since advanced ⅜, making the total rise from yesterday's closing 1¼ %. As there are nearly $1,000,000,000 of these bonds outstanding, it may be said that the advance in the market value of this form of the public credit amounts already to nearly $12,000,000. Railroad investments are strong, although in the excitement comparatively little attention has been given to them. Stocks which are much speculated in opened at an advance of ½ @ 5 %; there was then an irregular advance, ranging from ½ to 2⅞ %, the highest prices having been made in the first hour. Since then a part of the early advance has been lost, the market having been feverish and alternately strong and heavy. We give below the quotations of governments and active stocks at the close of business to-day.

The principal dealings of the week on the Stock Exchange have been in Erie, Milwaukee and St. Paul, Northwestern, New Jersey Central, D., L. & W., Wabash, Western Union and I., B. & W.

The bank averages for the past two weeks compare as follows:

	Oct. 2.	Oct. 9.	Comparison.
Loans	$309,323,600	$313,321,200	Inc. $4,097,600
Specie	65,256,300	66,992,200	Inc. 1,735,900
Legal t'nd'rs	13,045,300	12,629,700	Dec. 416,700
Tot. reserve	78,302,600	79,621,800	Inc. 1,319,200
Deposits	295,001,400	301,013,600	Inc. 5,402,200
Reserve required	73,902,850	75,253,400	Inc. 1,350,550
Surplus	4,399,750	4,368,400	Dec. 31,350
Circulation	18,636,700	18,573,000	Dec. 63,000

The foreign trade movements for the week are shown in the following tables:

FOREIGN IMPORTS.

For the week ended October 9:

	1878.	1879.	1880.
Total for week	$7,194,502	$7,341,638	$8,340,288
Prev. reported	214,713,878	239,954,122	372,595,536
Since Jan. 1	$221,908,380	$247,295,760	$380,935,824

Included in the imports of general merchandise for the week were articles valued as follows:

	Quantity.	Value.
Anvils	112	$764
Brass goods	37	6,996
Chains and anchors	32	2,678
Bronzes	36	9,635
Copper	...	876
Cutlery	158	49,982
Pins	2	413
Guns	143	24,103
Hardware	29	15,305
Iron, hoop, tons	534	22,481
Iron, pig, tons	2,787	65,396
Iron, sheet, tons	134	17,787
Railroad bars	8,742	104,810
Iron ore, tons	1,966	5,673
Iron, other, tons	6,913	197,996
Metal goods	162	16,503
Nails	3	909
Needles	12	8,189
Nickel	6	2,582
Old metal	...	1,148
Platina	4	5,906
Percussion caps	5	2,040
Saddlery	5	1,592
Steel	1,147	21,051
Silverware	4	124
Tin, boxes	31,650	142,787
Tin, 3032 slabs; 386,172 lbs.		76,677
Wire	618	9,450
Zinc	11,025	524

EXPORTS, EXCLUSIVE OF SPECIE.

For the week ended October 12:

	1878.	1879.	1880.
For the week	$7,183,567	$9,420,882	$8,525,621
Prev. reported	261,444,405	251,873,407	309,790,852
Since Jan. 1	$268,627,972	$261,294,789	$318,316,473

EXPORTS OF SPECIE.

For week ended October 9:

Total for the week	$322,385
Previously reported	5,618,642
Total since January 1, 1880	$5,591,027
Same time in 1879	$12,847,409
Same time in 1878	10,797,395
Same time in 1877	23,307,116
Same time in 1876	40,748,065
Same time in 1875	66,036,370
Same time in 1874	43,446,332
Same time in 1873	42,926,473
Same time in 1872	60,233,983

Government bonds at the close were strong. The net advance in the 4s to-day was ¾, and in the 4½s, 1¼ %. The closing quotations were as follows:

	Bid.	Asked.
U. S. 6's 1880 registered	102⅞	102¾
U. S. 5's 1880 coupon	102⅞	102¾
U. S. 6's 1881 registered	104⅜	104⅜
U. S. 6's 1881 coupon	104⅜	104⅝
U. S. 5's 1881 registered	101⅜	101½
U. S. 5's 1881 coupon	102½	102¾
U. S. 4½'s 1891 registered	109⅜	109⅞
U. S. 4½'s 1891 coupon	109⅝	109⅞
U. S. 4's 1907 registered	108⅞	109
U. S. 4's 1907 coupon	108⅞	109
U. S. Currency 6's 1895	125	—
U. S. Currency 6s 1896	125	—
U. S. Currency 6s 1897	125	—
U. S. Currency 6s 1898	125	—
U. S. Currency 6s 1899	125	—

The following were the closing quotations of active stocks:

	Bid.	Asked.
Alton and Terre Haute	—	21
" " Pref	—	79
American District Telegraph	74	75¼
Atlantic and Pacific Telegraph	41	41¼
Boston Air Line	43	45
Burlington and Quincy	138¾	139
Colorado Coal and Iron	19½	20
Chesapeake and Ohio	20⅝	20¾
" " 1st Pref	26⅛	27½
" " 2d Pref	21½	22½
Canada Southern	61	61⅞
Climax	—	1
Central Pacific	71⅞	—
Chicago, St. Louis and New Orleans	36¾	38
Clev., Col., Cin. and Indianapolis	71⅞	72½
Col., Chic. and Indiana Central	18⅛	18½
Central Arizona	8¾	8¾
Caribou	3⅞	—
Chicago and Alton	113	115
" " Pref	133	—
Denver and Rio Grande	71	71¼
Delaware, Lack. and Western	94⅞	94½
Delaware & Hudson Canal	85½	85¾
Erie	42⅝	42⅞
" Pref	73⅜	73¾
Erie and Western	33¼	33½
Excelsior Mining	8½	8½
Hannibal and St. Joseph	39⅞	40
" " Pref	83½	83¾
Homestake	—	34
Houston and Texas	66	67
Illinois Central	113¼	113½
Iron Mountain	51⅛	51¼
New Jersey Central	70⅜	70⅝
Kansas and Texas	36⅛	37
Keokuk and Des Moines	—	8
" " Pref	28	30
Lake Shore	111⅜	111⅜
Little Pittsburgh	—	2½
Louisville and Nashville	158½	162
Michigan Central	100	100⅛
Morris and Essex	112½	—
Nashville and Chattanooga	62	62¼
New Central Coal	25	28
New York Central	131⅞	132
New York Elevated	114	115½
Mont. Gas Coal	—	73½
Northern Pacific	28⅝	29
" " Pref	52⅞	53
Northwest	113⅛	113¼
" Pref	132⅛	133
Ohio Central	24½	25
Ontario Silver	32	34
Ontario and Western	23⅜	23¾
Ohio	33⅞	34¾
" Pref	75	75⅝
Oregon Navigation	130	—
Quicksilver	11	12½
" Pref	52	54
Reading	32	32⅛
Rock Island	117⅞	118
San Francisco	34	34½
" Pref	45	45⅞
Silver Cliff	—	3
*Standard	26⅝	27
St. Paul	97⅝	97¾
" Pref	112	112½
St. Paul and Omaha	44	44¼
" " Pref	83⅞	84
Union Pacific	91⅛	91¼
Wabash	38¾	39
" Pref	71⅞	71⅜
Peo., Dec. and Evans	25⅛	25¼
Indiana, Bloom. and Western	38	40
Sutro Tunnel	1	1¼
San Francisco, 1st Pref	74½	75
Marietta and Cincinnati Pref	4⅞	5
" " 2d Pref	2¾	3
Bur., Cedar Rapids & North	65	67
Metropolitan Elevated	99¾	99¾
Manhattan Elevated	35½	35¾
Express—Adams	117	117½
" Wells, Fargo & Co	112	113¼
" American	59½	59¾
" United States	49½	50

MINING STOCKS.

The following were the closing quotations of the New York Mining Stock Exchange:

	Bid.	Asked.
Amie		61
American Glag	33	40
Bell Isle	45	60
Buckeye	21	22
Calaveras	31	32
Caledonia	99	—
California	2.15	2.20
Climax	78	80
Consolidated Virginia	2.90	2.95
Chrysolite	5.00	5.12½
Great Eastern	55	56
Goodshaw	—	43
Great Mountain	3.50	3.55
Granville	10	11
Independence	39	41
La Plata	—	5.50
Lucerne	—	17
L. Chief	87	90
Moose	47	48
Navajo	—	55
Rappahan	25	26
S. Hite	1.05	1.10
S. Bulwer	.50	55
Unadilla	.15	16

GENERAL HARDWARE.

We hear a good deal of complaint that business has fallen off considerably during the past few days, but there is still a fair business doing, and prices are firm, except in the case of Nails, which are unsettled and weak. Although the quotation is still nominally $3.15 @ $3.25, they are offered, even in small lots, at a considerable concession from these figures.

An advance of 5 per cent. has taken place in Wade & Butcher's and Wostenholm's Razors, which are now quoted $3 to the £ from stock, or 5 per cent. less for direct importation.

The Lock Association held a meeting today, at which present prices were confirmed.

The makers of Planes have advanced their prices to discount 25 and 7½ per cent. for first quality, and 30 and 7½ per cent. for seconds, instead of 25 and 10, and 30 and 10 per cent., as formerly.

The Providence Tool Company, in another column, advertise a line of Chamfered, Trimmed and Drilled Nuts. These are the only goods of the kind made with drilled holes, and they cost about 2 cents per pound more than ordinary hot-pressed Nuts.

Russell & Erwin Mfg. Co. have added a new Tripod Fire Iron Stand to their assortment. It is made of Iron, verde antique finish, with Assyrian figures. It stands 29 inches high, and is a very handsome and striking article. Price, $50 per doz.; discount, 50 per cent.

Graham & Haines have taken the agency for Bostwick's Giant Riding Saw Machine, a piece of mechanism which could hardly be described without an illustration. We quote as follows from the circular:

"The operator sits in the saddle, with his feet upon the treadles and hands upon the lever, in a perfectly easy and natural position. The Saw is driven by motions of the body so easy and natural that they are not felt. It is no more than riding a horse. In addition to this, the entire weight of the operator is brought to bear to aid the Saw, thus giving it a double power. The principles of leverage employed in its operation afford the most perfect application of power that can be devised. The force is applied just 'where it will do the most good.' Every 'foot-pound' of power produces a 'foot-pound' of good honest work. The saw blade is 5½ feet long and has a 3½ foot stroke, back and forth, and cuts both ways. By means of the adjustable seat, the machine can be altered to suit any sized person, whether large or small, so as to be perfectly easy to operate, but always maintains the same length of stroke. One person can easily and rapidly operate the Giant Riding Saw Machine without stopping to rest. It is warranted to the end that one man can saw more logs or wood in a day than two men can the old way with the latest improved cross-cut saw."

The price of the machine is $25 each. Regular discount 25 per cent.; in lots of ten, discount 33⅓ per cent. The manufacturers state that they have sold 300 at the Cincinnati Exposition this year.

Williams, White & Co., 55 Warren st., have furnished us the following discounts from the list prices in their catalogue of 1877. An additional discount of 10 per cent. is taken from all bills paid by the 15th of the following month:

Page in Catalogue. Dis. per cent.
51, Rolled Eye Plate Hinges....70&7½
51, " " with Drive Hooks.70&7½
51, Welded Eye Plate Hinges....40
51, " " " with Drive Hooks...40
51, Rolled Eye Raised Plate Hinges....70&7½
51, Welded Eye " " 40
52, Small Rolled Eye Blind Hinges, Wood, 8.89..net
52, " " " " Brick, 8.89..net
52, Large " " " ....20c net
52, " Welded Eye Blind Hinges....30c. net
52, Heavy Wrought Rolled Eye Hook Hinges, 8 to 12 in., per lb. 6c....net
52, Heavy Wrought Rolled Eye Hook Hinges, 14 to 40 in., 5c....net
52, Heavy Welded Eye Hook Hinges, 8 to 12 in., per lb. 8c....net
52, Heavy Welded Eye Wood Screw Hook Hinges, 14 to 40, per lb. 7c....net
52, Heavy Welded Eye Plate Hook Hinges, per lb. 15c....40
52, Heavy Welded Eye Raised Hook Hinges, per lb 20c....35
53, Barn Door Hook and E. Hinges, 1 Drive Hook....35
53, Barn Door Hook and E. Hinges, W'd Sc Hook....35
53, L't Welded T or Trap Door Hinges, 3-16 in. Iron....40
53, Heavy Welded T or Trap Door Hinges, ¼ in. Iron....40
53, Heavy Welded Eye Strap Hinges....40
53, Scuttle Door Hinges....40
53, L't Strap Hinges, lowest market prices.
54, Heavy " " "
54, Light T Hinges, " "
54, Heavy T " " "
54, Ex. Heavy T Hinges, " "
55, Chest Hinges, " "
55, Hasp " "
See change in list on last page.
55, Wrought Staples....70
55, " Assorted....70
55, Wrought Hooks and Staples....70
55, " Gooseneck H'ks and Staples, Jap'd..50
55, " Hooks, with Plate Staples....50
55, " Plate Staples....50
56, Step Ladder Hooks....50&10
56, " Bolts, 5-16 in. Iron....50&10
56, Fence Staples, 9c. Galvanized, per lb. 12c..net
56, Hasps and Staples....70
56, Heavy Hasps and Staples, 3-16 in. Iron....70
56, Ex. Heavy Hasps and Staples, ¼ in. Iron.50&10
56, Hasps and Staples, with Hooks....70
56, Heavy Hasps and Staples, with Hooks....70
56, Ex. Heavy Hasps and Staples, " ....50&10
57, Bent Hasps and Staples....70
57, Heavy Welded Jointed Hasps, with plate Staples....50
57, Ex. Heavy Store Door Hasps, with Eye Bolts.40
57, Cellar Door Batten Hasps....50
57, Extra Heavy Store Door Key Cover and Eye Bolts....40
57, Awning Hooks....55&5
57, " Assorted....55&5
57, Tinners' Hooks....60
57, Plumbers' Hooks....60
56½, Flat Store Door Bolts, 1¼ in. Plate....30&10
56½, " " " 1½ or 1¾ in. Plate.30&10
56½, Flat Shutter Bolts, Jap'd....50&10
58, Flush Store Door Bolts, 1 in. Plate....40&10
58, " " " 1¼ " ....40&10
58, " " " 1½ " ....40&10
58, " " " 1¾ " ....40&10
58, Brass Flush Bolts....30&10
58¼, Flush Store Door Bolts....40&7½
58¼, " " " with Brass Knobs...50
58¼, Flush Store Door Bolts with Raise Thumb Piece....40&7½
58, Heavy Wrought Shutter Bars, Jap'd....50
58, Malleable Shutter Bars....30&5
58, Brass Shutter Bars....33
59, Light Bar Staples....50&5
59, Heavy Bar Staples....50&5
59, Swivel Bars....50&5
59, Brass Shutter Screws....35
59, Mackrell's Mal. Oval Blind Fastenings....40&5
59, Mackrell's Brass Oval Blind Fastenings....30
59, Screw Blind Fastenings, 1¼, $9.80....net
60, M. & R.'s Old Pattern Blind Fastenings....15
60, 3705 Van Sand's Old Pattern Blind Fastenings, 1¼ in., $10....net
60, 3706 Van Sand's Old Pattern Blind Fastenings, 1½ in., $10.55....net
60, M. & R.'s Narrow Plate Blind Fastenings....15
60, Turn Buckles....55
61, Turn Buckles, Cast, Japanned....65
61, Jap'd Drops and Pins, with Staples....65&5
61, " " " on Plate....65&5
61, " Wrought Drops and Pins, on Plate....50
61, Blind Catches, for Wood or Brick, $2.25, per gross.
61, Blind Springs....35
61, Light Corner Irons, not Filed....50&5
62, " " " Filed....50&5
62, Heavy " " not Filed....50&5
62, " " " Filed....50&5
62, " " Knees....50
62, Trap Door Rings....70
62, " " " with Staples....70
62, " " " Assorted....70
62, " " " Assorted with Staples....70
62, Flush Trap Door Rings....60
62, Hitching Rings....60
62, Horse Hooks....60
62, Japanned Swivel Rings, on Plate....60
63, Lap Rings, for repairing Chains....80&7½
63, " Links, " " ....80&7½
63, S. Hooks, " " 70
63, Gate Latches....55&5
63, Catches for Gate Latches....55&5
63, " " " Assorted....55&5
63, Staples " " ....55&5
64, " " " Assorted....55&5
64, Gate Latches, Complete....55&5
64, Spring Gate Latches, Japanned, Wrought....45
64, Heavy Thumb Latches....20
64, Extra Heavy Thumb Latches....20
64, Cast Iron Spring Gate Latches....45
64, Heavy Round Gate Bolts....20
95, Blacksmiths' Pincers....55&5
65, " Tongs....35&7½
65, " Buttresses....30&10
65, " Shoeing Hammers....40
65, " Toe Knife....10
65, " Buffer....10
65, " Pritzel....10
65, " Clinching Irons....10
65, " Hardie Eye Cutting Chisels....10
66, " Anvil Hardies....10
66, " Top and Bottom Swedges....10
66, Cast Steel Cold Chisels....60
66, Blacksmiths' Tweer Irons, Square Pattern...10
66, " " " Duck Nest Pat....10
67, " Monitor Tweer Irons....10
67, Meat Hooks, to Drive, Tinned....60&10
67, " Screw in, " ....60&10
67, " Screw on, " ....60&10
68, Ex. Heavy Meat Hooks, to Screw on, Tinned.45
68, Leader Hooks....50
68, Jamb or Sign Hooks....35
68, Well Hooks....35
68, Cistern Hooks....35
68, Glass Hooks, Assorted....30
68, Gas Pipe Hooks....35
68, Holdfasts....40
68, Nail Claws....30
68, Nail Grips....30
68, Well Grappling Irons....25
68, Light Box Chisels....55
69, Heavy " 55
69, Flat " 55
69, Nail Sets....60&20
69, Oyster Knives....60
69, " Blocks....each, 60c. net
69, Heel Wedges....45
69, Hinge Nails....65&10
69, " Rivets....65&10
69, Wagon Nails....65&10
69, Truss Hook Nails....65&10
69, Bellows Nails....65&10
70, Wagon Body Staples....75&10
70, Ice Tongs....60
70, Pot Bales....30
70, " Jointed....30
70, Wrought Foot Scrapers....50
70, Ox Yoke Rings and Staples....45
70, Beetle " 45
70, Iron Wedges....40
70, Drag Teeth....45
70, Crow Bars....
70, Scup Hooks and Eyes....25
70, Hay Pulley Hooks....25
71, Clothes Line Hooks to screw on....35
71, " " " " in....35
71, Whitewash Brush Clamps....40
71, Stair or Hand Rail Screws....60
71 " " " Braces....25
71, Four Pronged Bed Keys....50&10
71, Z Pattern....50&10
71, Gate Balls....20
71, Quoits....30
72, Dumb Bells....20
72, Dish Foot Scrapers....40
72, Self-Fastening Cupboard Catches....50
72, Yard Line Pulleys....50
72, No. 45, Packed in Papers..$6.20 Bulk...$0.17
73, No. 55, " " .24 " .22
75, No. 56, Heavy Polished Wheel Packed in Papers....$0.28¾ Bulk.$0.26¾
73, No. 65, Packed in Papers. .33 " .31
73, No. 70, " " .49 " .47
73, No. 75, " " .57¼ " .55
73, No. 85, " " .64 " .61½
74, No. 95, " " 1.00 " .98
74, No. 100, " " 1.15 " 1.13
74, No. 105, " " 1.30 " 1.28
74, No. 115, " " 1.80 " 1.78
75, Champion Chain Pulleys, square groove....55
75, Dumb Water Pulleys, not Japanned....45
75, Champion Dumb Waiter Pulleys, 4 in....55
75, " Noiseless " 55
75, Wire Picture Cord, Tinned....80&20
75, " " Lacquered....80&20
75, " " Gold Plated....80&20
60½ Patent O K Hinge and Fastener, $6 per doz sets....30

The following goods are subject to a discount of 40 and 10 per cent.

46, No. 10, Sheaves, 3-in. wheel, per set....$1.02
46, No. 10, " 4-in. " 1.24
46, No. 10, " 5-in. " 1.54
46, No. 10, " 6-in. " 2.06
46, Sheaves, 1½ in. wheel, per set....1.14
46, " 2-in. " 1.26
46, " 3-in. " 1.64
46, " 4-in. " 1.90
46, " 5-in. " 2.50
45, " 6-in. " 3.60
46, " 1½-in. Brass wheel, per set....2.32
46, " 2-in. " " 2.58
46, " 3-in. " " 3.40
46, " 4-in. " " 4.00
46, " 5-in. Brass Wheel, per set....6.80
46, " 6-in. " " 8.65
46½, Black Diamond House Sheaves, 4 in., per set....6.20
46½, Black Diamond, School-House Sheaves, 4 in., $7.50; 6 in....10.30
46½, Patent Picture Nails....20 % off list
47, Sheaves, 3-in. Brass Wheel, Steel Bushed, per set....5.14
47, Sheaves, 4-in. Brass Wheel, Steel Bushed, per set....6.20
47, Sheaves, 5-in. Brass Wheel, Steel Bushed, per set....8.25
47, Sheaves, 6-in. Brass Wheel, Steel Bushed, per set....10.30
47, Wrt. Sheaves, 4-in. Brass Wheel, per set..16.48
47, " 5-in. " " ..18.56
47, " 6-in. " " ..21.64
49, School-House Sheaves, 5-in. Iron, per set..9.26
47, " " 6-in. " " ..10.30

BRITISH IRON MARKET.

[*Special Report by Cable to The Iron Age.*]

London, Wednesday, October 13, 1880.

Scotch Pig.—A very fair business has been done during the week under a steady demand, and prices are firmer. Our quotations show an advance over last week's figures of 2/ on Gartsherrie, 1/ on Coltness, and 6d. on Eglinton. Following are makers' prices:

Gartsherrie	60/6
Coltness	60/6
Glengarnock	54/6
Eglinton	52/

Manufactured Iron—Is quiet, with prices weaker. Best Staffordshire Bars are quoted at £7. 10/.

Steel Rails—Are in active demand, and transactions have been quite large. Prices are steady. We quote, for ordinary sections, £6.

Iron Rails.—There is very little business doing, and quotations are nominal. Welsh are quoted, £5 @ £5. 5/.

Old Rails—Are offering in moderate quantities, and sales have been fair. Prices are, however, weaker, T's being quoted at £3. 12/6.

Scrap—Is without change to note.

IRON.

American Pig.—The condition of the market shows no important change—certainly no improvement. Transactions are small and unimportant. Many brands are held above our quotations; but in order to realize on any considerable quantity, it would almost certainly be necessary to accept lower prices. We quote without change: Foundry No. 1, $25; Foundry No. 2, $20; Gray Forge, $19.50 @ $20.50.

Scotch Pig.—Last week some large transactions took place, which disposed of all the Scotch Iron that had been pressing on the market. It is true this Iron is still held for sale, but by parties who are not likely to force it. Since these purchases there has been little doing, but the market is in a good condition. We quote: Glengarnock, $23 @ $24; Carnbroe, $23.50; Gartsherrie, $22 50 @ $23.50; Eglinton, $21.50 @ $22; and Coltness, $23.50 @ $24.

Rails.—Buyers are still turning their attention toward English Steel Rails, partly on account of the difficulty of placing orders with the American mills, and partly because for many deliveries they are the cheaper. We quote American Steel, $60 @ $65; Iron, $47 @ $50, according to location of mill and time of delivery.

Old Rails.—We quote $26 @ $27 for Ts and Double Heads, with sales of about 2000 tons, part for shipment.

Scrap.—We quote No. 1 Wrought, from yard, $25 @ $26, and note the sale of 400 tons at $25.

Manufactured Iron.—The demand is reported to have improved somewhat, and a firmer tone prevails. Refined Bar is still quoted ostensibly at 2.6¢, at which price small parcels are obtainable. Round lots are not offered for less than 2.5¢ from store.

METALS.

Copper.—Nothing of interest has transpired during the week, sales being limited to 100,000 lb Lake Superior, at 18⅞¢ @ 19¢, which is also the closing figure, while Baltimore is worth 18¾¢ @ 18⅞¢. There is no change in the London market. "London, Oct. 2.—Business in this metal continues rather restricted, and prices for the raw material have consequently assumed a somewhat easier tendency, recent advices from Valparaiso showing a fall in the price there to £58. By the Board of Trade returns it is seen that the imports of Australian Copper have lately been heavy, which shows that there is as yet no reduction in the supply from that source. In Manufactured sellers continue firm in their prices, and the easier tendency of the Bar market does not appear to have produced any influence whatever on either the price of Copper or Yellow Metal Sheets. A good business in Manufactured is reported to have been transacted for Bombay, and, consequently, a few of the manufacturers are fairly well off for orders, which is the cause of the firmness displayed in quotations. The statistics of Chili produce for the last half of September show a slight reduction in stock, the total quantity in first and second hands in Liverpool and Swansea being estimated at 33,584 tons, against 33,882 tons on the 15th ult. The imports during the last fortnight of September were 1065 tons, against 150 tons for the same time in 1879, while the deliveries for similar periods were 1363 tons against 1905 tons." Manufactures remain as under: Bottoms, 31¢; Braziers, according to size, 28¢ @ 34¢; Circles, 31¢ @ 34¢; Segment Sheets, 31¢; Fire-box Sheets, 28¢; Sheathing, 26¢; and Bolt Copper, 28¢.

Tin.—Our market is beginning to show a little more activity. About 200 tons Straits have changed hands during the week. The London market has advanced to £86. 10/ @ £87 with Straits Tin, with an upward tendency. Singapore cables to-day $27 per picul, with a firmer market. At Batavia 13,000 piculs Billiton Tin were sold at the auction of 12th instant, fetching 58.25 guilders per picul, or about the same price as the August sale. The above quantity is thought to have been all taken for Europe. Shipments from Australia to England show a decided falling off, having been only 500 tons in September. The shipments from there to London during the first nine months were 5398 tons, against 5958 tons during the same time in 1879; from the Straits to London during the nine months they were only 1330 tons, against 2855. In view of the general position of the metal it has been gaining strength in the New York market also. The position here is indeed a peculiar one; an attempt to buy a considerable lot would probably result in an immediate advance. For the moment comparatively little actual business is transacting and we quote at the close, large lots: Straits, 19⅞¢ @ 20⅛¢; Australian, 19½¢ @ 20¢; Billiton, 19¾¢ @ 20¢, and English Common, 19¼¢ @ 19½¢. "London, October 2.—The statistics for the month of September are considered satisfactory, the visible supply having been reduced to 13,902 tons, against 14,244 tons on August 31, and 16,242 tons on September 30, 1879. The deliveries in London and Holland during last month were 1675 tons, against 1404 in August, which makes the total deliveries this year 14,785 tons, against 15,470 tons for the corresponding period of 1879. The shipments from Straits last month were 200 tons, and from Australia 450 tons; and the total shipments from Straits and Australia for this year have been 6728 tons, against 7903 tons for the same time in 1879." *Tin Plates.*—Business in this article has been extremely quiet, and there has been very little doing. Abroad the markets are firmer than they are here. We quote toward the close, large lots, ordinary brands, per box: Charcoal Bright, $6.25 @ $6.37½; ditto Ternes, $5.50 @ $5.62½; Coke Tin, $5 @ $5.12½, and ditto Ternes, $4.87½ @ $5.

Lead.—Sales for the week sum up 300 tons Common Domestic at 4.85¢, which is also the closing quotation on a very quiet market, while we quote Refined, nominally, 5¼¢. "London, October 2.—But a limited amount of business continues to be transacted in this metal, and prices have not undergone any material alteration." Manufactures are quoted as follows: Sheet Lead, 7¢; Lead Pipe, 6½¢; Tin-lined ditto, 15¢, and Block Tin Pipe, 40¢.

Spelter and Zinc.—The dullness now observable in this metal for a number of months has remained uninterrupted during the week; the dealings have been trifling, and we have merely to repeat our last quotation of 5¢ @ 5¼¢ for Common Domestic, and 5⅜¢ @ 6¢ for Silesian, according to brand. Sheet Zinc is worth 7½¢. "London, Oct. 2.—Prices continue easy, but buyers for shipment are still scarce for both foreign and English."

Antimony.—A better demand has sprung up since our last report. The stock has meanwhile run quite low. Last sale of Cookson brand—10 cakes—was made at 15¼¢. The cost of importation exceeds 15¢. Hallet may be quoted 14½¢.

OLD METALS, PAPER STOCK, &c.

The demand for Old Metals is fair. We note a slight reduction in prices of Brass and Copper. There is a falling off in the demand for Paper Stock, with a tendency to a reduction in prices.

The purchasing prices offered by dealers for Old Metals are as follows:

Copper, heavy....℔ $0.15 @ $0.16
Copper Bottoms....." .13 @ .14
Yellow Metal....." .08½ @ .09

Brass, heavy	₩ lb	.10 @	.10½
Brass, light	"	.08 @	.09
Composition, heavy	"	.12 @	.13
Lead, heavy	"	.03¾ @	.04
Tea Lead	"	.03¼ @	.03½
Zinc	"	.03½ @	.03¾
Pewter, No. 1	"	.11 @	.12
Pewter, No. 2	"	.08 @	.09
Wrought Iron	₩ ton	20.00 @	21.00
Light do	"	10.50 @	12.00
Stove Plate	"	11.00 @	12.00
Machinery do	"	15.00 @	16.00
Grate Bars	"	6.00 @	7.00

The prices current for Rags, &c., are as follows:

Canvas, Linen	₩ lb. 3½c. @	....
White Cotton, new	3¾c. @	....
No. 2	3½c. @	....
White, No. 1	3½c. @	4c.
No. 2	2½c. @	....
Seconds	1½c. @	1¾c.
Soft Woolens	10 c. @	....
Mixed Rags	2 c. @	3 c.
Gunny Bagging	1¾c. @	....
Jute Butts	2¼c. @	....
Kentucky Bagging	3 c. @	....
Book Stock	3½c. @	....
Newspapers	2 c. @	....
Waste Paper and Scraps	1 c. @	....
Kentucky Bale Rope	4 c. @	....

EXPORTS

Of Hardware, Iron, Machinery, Metals, &c., from the Port of New York, for the Week ending Oct. 12, 1880:

	Quan.	Val.
Danish West Indies.		
Mf. iron, pkgs.	87	55
Clocks, bxs.	2	53
Glassware, cs.	2	51
Hdw., cs.	13	52
Dutch West Indies.		
Lamps, pkgs.	6	119
Nails, bxs.	10	258
Hdw., cs.	20	313
Pitdware, cs.	2	52
Hamburg.		
Hdw., cs.	126	5,760
Machinery, cs.	182	4,274
Belting, bales	7	1,227
Mf. iron, pkgs.	17	1,800
Sew. ma., cs.	110	1,660
Lub. oils, bbls.	150	2,332
Metal g'ds, cs.	3	1,123
Ag. imp., pgs.	16	955
Clocks, bxs.	23	658
Bremen.		
Ag. imp., pgs.	2	125
Hdw., cs.	16	690
Clocks, bxs.	2	84
Ore, bbls.	11	1,396
Belting, bales	4	468
Wheels, pkgs.	40	250
Mf. iron, pkgs.	13	232
Copenhagen.		
Ptlm., gals.	186,303	21,424
Clocks, bxs.	2	83
Stettin.		
Ptlm., gals.	142,066	14,429
Rotterdam.		
Mf. iron, pkgs.	8	229
Hdw., cs.	24	200
Silverware, cs.	2	30
Wheels, bxs.	2	135
Rifles, cs.	1	16
Lub. oil, bbls.	150	1,866
Sew. ma., cs.	201	2,400
Belting, bx.	1	80
Brass goods, cs.	1	200
Glassware, cs.	2	28
Ptlm., gals.	173,225	20,000
Carriages	2	680
Cge mtls., pgs.	7	101
Copper, csks.	21	7,160
Amsterdam.		
Ptlm., gals.	257,685	25,768
Elsinore.		
Ptlm., gals.	317,382	35,510
Christiansand.		
Ptlm., gals.	296,373	34,040
Antwerp.		
Ptlm., gals.	984,036	112,000
Bristol.		
Clocks, bxs.	20	243
Spokes, cs.	30	145
Mach'y, cs.	1	400
Hull.		
Glassw'e, cs.	22	425
Hdw., cs.	45	1,093
Ag. imp., pkgs.	10	1,112
Mach'y, case	1	30
Clocks, bxs.	10	70
W. mills, pgs.	15	600
Pitdware, cs.	1	54
Crucibles, cs.	1	50
Belfast.		
Ptlm., gals.	154,899	19,567
British North American Colonies.		
Coal, tons	1,708	7,240
Nails, kegs	16	450
Glassw're, cs.	13	125
Mf. iron, pkgs.	15	200
Ptlm., gals.	16,286	2,382
Lmp gds., pgs.	3	102
Hdw., cs.	19	379
British West Indies.		
Mf. iron, pkgs.	3	57
Hdw., cs.	21	401
Glassw'e, cs.	6	116
Mach'y, cs.	1	45
Ag. imp., pkgs.	18	257
Shingles	50,000	250
Nails, kegs	69	231
Ptlm., gals.	11,500	1,840
Sew. ma., cs.	11	196
New Zealand.		
Clocks, pkgs.	117	3,338
Hdw., cs.	388	8,333
Carriages	12	1,600
Nails, cs.	69	1,057
Saddlery, cs.	1	30
Machy., pkgs.	10	2,625
Arms & a, bx.	1	74
Cars	2	1,760
Belting, cs.	1	274
Tinware, cs.	3	150
Glassw'e, cs.	42	609
Lmp gds, pgs.	42	385
Cge mtls, pgs.	138	1,822
Ag. imp., pkgs.	83	3,582
Pumps, pkgs.	13	600
Mf. iron, pkgs.	2221	9,732
Nails, kegs	40	130
Pitdw'e, pkgs.	84	1,633
Sew. ma., cs.	15	355
Saws, cs.	7	191
Wringers, cs.	9	91
British Possessions in Africa.		
Mf. iron, pkgs.	67	750
Ag. imp., pkgs.	202	4,207
Wire f'ce, pgs.	108	1,100
Carriages	45	9,890
Hdw., cs.	82	1,204
Pumps, pkgs.	3	212
Sew. ma., cs.	10	765
Staples, kegs	8	75
Ptlm., gals.	1,704	450
Clocks, bxs.	28	2,375
Belting, case	1	175
Havre.		
Ptlm., gls.	1,190,427	84,440
Sew. ma., cs.	402	4,800
Mach'y, cs.	1	736
Lub. oil, bbls.	45	600
Silverware, cs.	1	13c
Ag. imp., pkgs.	45	3,623
British Guiana.		
Ptlm., gals.	11,100	1,600
Nails, kegs	51	283
Hose, bales	2	21
Sil. ware, cs.	1	129
Ag. imp., pkgs.	6	40
Sew. ma., cse	1	55
Hdw., cs.	28	904
Carriage	1	350
Glassware, cs.	3	75
Crge. mt., pkgs.	69	890
Blocks, pkgs.	4	243
British Honduras.		
Mf. iron, pkgs.	1	27
Ag. imp., pgs.	4	50
Saddlery, cs.	1	45
Shingles, bdls.	80	75
Glassware, cs.	27	153
Sew. ma., cs.	9	172
Machinery, cs.	2	70
Hdw., pkgs.	22	336
Blocks, pkge.	1	4
Nails, kegs	53	222
Arms, cs.	2	76
Lmp gds, pgs.	12	138
Hoops	1250	38
French West Indies.		
Carriages	2	488
Ptlm., gals.	13,000	1,950
Hayti.		
Glassware, cs.	12	377
Iron, bdls.	89	150
Lamp oil, gls.	85	120
Nails, kegs	44	136
Car	1	125
Sew. ma., cs.	5	164
Ptlm., gals.	3300	519
Hdw., cs.	22	416
Piana mtl., cs.	2	20
Mach'y, cs.	11	820
RR. mtl., pkgs.	60	390
Venezuela.		
Ptlm., gals.	7800	1,174
Sew. ma., cs.	8	94
Nails, bxs.	31	504
Hdw., cs.	16	400
Mf. iron, pkgs.	10	146
United States of Colombia.		
Cutlery, cs.	3	81
Copper, cs.	1	102
Am'nition, cs.	1	75
Ptlm., gals.	60	11
Hdw., cs.	2	51
Mf. iron, pkgs.	1	31
Central America.		
Iron, pkgs.	1	30
Mf. iron, pkgs.	3	63
Ptlm., gals.	220	40
Powder, pkgs.	124	63
Mf. cop'r, cs.	1	42
Hdw., cs.	31	476
Nails, kegs	9	39
Firearms, cs.	2	40
Silverware, cs.	2	167
Tinware, cs.	3	33
Lmp. gds, pgs.	4	25
Anchors	4	63
Sew. ma., cs.	4	88
Saddlery, cs.	1	23
Shot, bags	40	65
Pitdw'e, cs.	1	136
Mexico.		
Nails, kegs	30	135
Sew. ma., cs.	46	995
Pumps, pkgs.	4	60
Springs, bdls.	8	250
Pig iron, tons	5	100
Carriages	2	300
Ptlm., gals.	4437	516
Hdw., cs.	73	815
Mach'y, pkgs.	86	3,688
Mf. iron, pkgs.	784	1,165
Coal, tons	50	300
Glassw'e, cs.	2	46
R.R. mtl., pgs.	116	850
Brazil.		
Lub oil, bbls.	97	4,087
Hdw., cs.	218	5,026
Clocks, bxs.	108	2,525
Mach'y, pkgs.	76	2,083
Car wh'ls, pr.	72	1,286
Iron boat	1	3,000
Cutlery, cs.	35	2,755
Gas fixt., bxs.	9	420
Carbines, cs.	45	10,100
Glassware, cs.	2	20
Lampgds, pgs.	6	410
Ag. imp., pgs.	39	993
Ptlm., gals.	40,000	6,074
Chains, csks.	1	20
Iron, pkgs.	50	1,600
Belting, bales	6	120
Tacks, cs.	10	210
Brass g'ds, cs.	1	85
Telephones, cs.	12	313
Pumps, pkgs.	5	467
Sew. ma., cs.	17	290
Mf. iron, pkgs.	16	315
Pitd. ware, cs.	14	1,267
Cartridges, cs.	106	2,472
Tinware, cs.	92	3,415
Wire, reels	219	2,074
Velocipedes, cs.	3	109
W'dmills, pgs.	13	305
Locomotive	1	10,428
Tin plate, bxs.	5	30
Porto Rico.		
Carriage	1	300
Hdw., cs.	23	403
Mf. iron, pkgs.	146	1,469
Lamp gds., pgs.	13	120
Nails, kegs	15	345
Ptlm., gals.	720	117
Wire, spools	10	98
Belting, cs.	1	36
Lead pigs	15	68
Ptlm., gals., cs.	1140	6,392
Sew. ma., cs.	35	491
Glassw'e, cs.	117	533
Ag. imp., pgs.	5	206
Mach'y, pkgs.	2	36
Scales	2	58
Grindstones	50	29
Cadiz.		
Hdw., cs.	9	203
Sew. ma., cs.	51	600
Mf. iron, pkgs.	2	20
Cuba.		
Mf. iron, pkgs.	242	3,137
Glassw'e, pgs.	54	1,401
Nails, kegs	387	1,294
Glue, bbls.	2	26
Hdw., cs.	46	800
Mach'y, pkgs.	113	14,298
Lamp gds, pgs.	32	365
Ag. imp., pgs.	37	773
Scales	17	957
R.R. mtl., pgs.	565	5,819
Copper tubes	3	424
Tir, cs.	4	124
Cutlery, cs.	2	78
Nails, bxs.	2	31
Truck	1	1,220
Ptlm., gals.	13,904	1,623
Grindstones	734	491
Hdw., pkgs.	345	4,855
Clocks, bxs.	2	40
Wagon	1	36
Mach oil, gals.	1360	792
Tacks, cs.	7	116
Wire, pkgs.	52	507
Tanks	2	200
Nails, hhds.	20	350
Carriage	1	427
Dunkirk.		
Ptlm., gals.	299,045	20,843
Canary Islands.		
Ptlm., gals.	9497	1,266
Sew. ma., cs.	1	15
Mf. iron, pkgs.	1	21
Cisplatine Republic.		
Hdw., pkgs.	95	2,680
Ag. imp., pkgs.	290	4,922
Shoe nails, cs.	20	170
Glassw., pkgs.	9	85
Cutlery, cs.	1	115
Tinfoil, case	1	80
Saddlery, cs.	1	206
Clocks, cs.	53	1,197
Lamp gds., pgs.	83	1,715
Iron safe	1	150
Pig iron, tons	8	50
Belting, case	1	35
Sandpaper, cs.	1	35
Fuse, bbls.	2	35
Tinware, cs.	7	208
Mf. iron, pkgs.	12	54
Bilbao.		
Ptlm., gals.	234,583	19,700
Passages.		
Ptlm., gals.	239,800	19,207
Alexandria.		
Ptlm., gals.	132,000	15,180
Glasgow.		
Cartridges, cs.	4	25
Mach'y, cs.	3	496
Glassw'e, pgs.	3	67
Ox. zinc, bbl.	25	333
Lub. oil, bbls.	60	687
Iron rolls, cs.	6	1,152
Rifles, cs.	1	50
W'dmills, pgs.	6	76
Liverpool.		
Clocks, bxs.	210	4,382
Hdw., cs.	87	3,894
Ag. imp., pgs.	10	680
Lub. oil, bbls.	216	2,527
Wagons	2	400
Gas fixt., cs.	1	200
Ptlm., gals.	64,832	6,000
Sew. mach. cs.	47	2,948
Pistols, cs.	2	700
Guns, cs.	1	150
Carbines, cs.	50	9,375
Rifles, cs.	1	100
Glassw'e, cs.	4	65
Mach'y, cs.	57	3,700
Mf. iron, pkgs.	47	348
Pitdware, cs.	5	486
Belting, cs.	4	1,750
Lamp gds pgs.	41	2,700
Oil tank	1	50
Nickel, bbls.	10	1,500
London.		
Ptlm., gals.	417,501	29,255
Lamps, pkgs.	54	2,285
Spelter, slabs	3282	10,800
Hdw., cs.	212	7,101
Mach'y, pkgs.	77	4,862
Cars	4	3,800
Ag. imp., pgs.	21	1,680
Pitdware, cs.	8	608
Lub. oil, bbls.	1110	8,070
Mf. iron, pkgs.	16	1,425
Handspikes	314	111
Car wheels	50	313
Pumps, pkgs.	20	1,065
Sew. mach. cs.	394	10,910
Clocks, bxs.	257	17,762
Tubing, cs.	1	448
Brl. ware, cs.	3	462
Glue, csks.	4	200
Car mtl., cs.	4	200

IMPORTS

Of Hardware, Iron, Steel and Metals into the Port of New York, for the Week ending October 11, 1880:

Hardware.

Boker Herrman & Co.
Hdw., cutlery and guns, pkgs., 18
Barbecker J.
Cases, 3
Brokahm Wm.
Whetstones, pkgs., 74
Brown W.
Case, 1
Bloomfield J. C. & Co.
Casks, 15
Case, 1
Mds., pkgs., 7
Downing Sheldon & Co.
Arms, cs., 13
Drexel, Morgan & Co.
Cases, 6
Cask, 1
Anvil's, 148
Crabb Wm.
Wire, bdls., 18
Grindstones, 20
Folsom H. & O.
Arms, cs., 10
Cases, 5
Mdse., pkgs., 5
Field A. & Co.
Anvils, 162
Cases, 9
Curry combs, case, 1
Hopkins E. T.
Case, 1
Jones C.
Packages, 6
McCoy & Saunders,
Mds., pkgs., 4
Merchants' Dispatch Co.
Arms, cs., 5
Montgomery J. G.
Cases, 3
Moores' J. P. Sons,
Gun stocks, cs., 3
Pim Forwood & Co.
Nails, kegs, 70
Rounthal J. & Co.
Packages, 2
Struller, Lau & Co.
Guns, case, 1
Schoverling, Daly & Gales,
Mds., pkgs., 8
Van Nest A. R.
Mdse., pkgs., 3
Windmuller L. & Roelker,
Mdse., pkg., 1
Whitte J. G. & Bros.
Mds., pkgs., 9
Ward Asline,
Mds., pkgs., 22
Wiebusch & Hilger Hardware Co.
Hdw. and cutlery, pkgs., 72
Order,
Cases, 4
Packages, 125
Millstones, csks., 16
Grindstones, csks., 40
Guns, cs., 8

Iron.

Bank of New York,
Hoops, bdls., 12,086
Brown Bros. & Co.
Blooms, 2421
Wire, csks., 26
Baring Bros.
Scrap rails, pcs., 1081
Scrap, pieces, 208
Crocker Bros.
Pig, tons, 200
Cheney Bros.
Machinery, cs., 4
Drexel, Morgan & Co.
Ore, tons, 220
Hogan J. F.
Ore, tons, 405
Henderson Bros.
Pig, tons, 100
Mayer Bros. & Co.
Scrap rails, 235
Milliken & Smith,
Wire, bundles, 791
Nederland Trading Society,
Scrap, tons, 103
Phelps Stokes & Co.
Pig, tons, 400
Perkins Livingston & Co.
Spiegel, tons, 410
Pim Forwood & Co.
Ore, tons, 32
Stroud W. L.
Hoops, bdls., 2130
Tillotson L. G. & Co.
Wire, lots, 796
Upson & Walton,
Wire rope, coils, 8
Williamson Jas. & Co.
Pig, tons, 50
Wittson J. & Co.
Wire rope, coils, 8
Order,
Pig, tons, 100
Wire rods, 1721
Spiegel, tons, 400
Cotton ties, bdls., 7000
Scrap rails, pcs., 440
Rods, lots, 739
Rails, 3179
Sheet, bdls., 38

Metals.

Baring Bros.
Tin slabs, 116
Brown V. H.
Tin plates, bxs., 2385
Bank of Montreal,
Tin slabs, 1860
Brown Bros. & Co.
Tin slabs, 2939
Behn, Myer & Co.
Tin slabs, 2911
Byrne Jos. & Co.
Tin plates, bxs., 3335
Canadian Bank of Com.
Tin plates, bxs., 1197
Dickerson, Vandusen & Co.
Tin plates, bxs., 3727
Grinnell, Minturn & Co.
Yellow metal, cs., 40
Lamarche H.
Zinc, csks., 126
Leaycraft & Co.
Scrap metal, box, 1
McKesson & Robbins,
Antimony, csks., 6
Phelps, Dodge & Co.
Tin plates, bxs., 18,515
Antimony, csks., 50
Rivera de J. & Co.
Scrap copper, pkgs., 75
Vatable H. A. & Son,
Scrap, bbls., 11
Winter, de Visser & Co.
Tin slabs, 1445
Order,
Tin ingots, 601
Tin slabs, 1066
Tin plates, cs., 5
Tin plates, bxs., 3070

Steel.

Abbott Jere & Co.
Bundles, 100
Alexandre F. & Sons,
Cases, 20
Brown W.
Bundles, 232
Prosser Thos. & Sons,
Steel, pkgs., 165
Temple & Lockwood,
Tires, 18
Order,
Spring, loads, 25
Rods, rings, 1231
Rails, pcs., tons, 175
Rails, 4075
Casks, 7

COAL.

Trade for the past week has been somewhat quiet, and many of the merchants are complaining. The curtailment seems to have had little or no effect upon business here, and its influence is only slight in relieving the pressure at the shipping points. The amount of coal moved is large, for the last week reported, 639,000 tons were sent to tide water. If the suspension was strictly adhered to during the few days of this month, when one was ordered, the output would probably foot up more than 300,000 tons for the last week. Many persons throw doubt on the half-time pretension, and say that the amount of coal which comes forward will be found to be about the same as usual. One thing seems to be certain, that if the mines produce only half the amount, which they can easily raise, there will be an ample supply for the whole country. Under these circumstances it appears somewhat surprising that for nearly a year the companies have been able to keep the price of Coal considerably above a fair paying price. What the future action of the companies will be it is difficult to guess. As yet the managers appear to have no ideas in regard to their future policy.

Freights are somewhat higher. We quote Boston, $1.15; Portland, 90¢ and discharged; Providence, 90¢; New Haven, 70¢. As soon as the captains knew that there was Coal to be had at the shipping points, freights advanced again. Prices for the free-burning Coals are weak, and it is said that good buyers are not paying higher prices than those of last month. The larger sizes of Lehigh Coals are scarce, and some kinds are not to be had at any price. The post office contract for 5000 tons, we understand, was taken at $5.08, delivered. Some think this will leave a fair margin to the contractors, while others say that during the winter months the contractors will be very likely to have the profit eaten up by the extra cost of delivery. The printed quotations are unchanged from last week. They are as follows:

	Lehigh.	Free-burning.
Lump	$5.00 @ $5.40	$4.00 @ $4.30
Grate	4.40 @ 4.50	4.00 @ ....
Egg	4.40 @ 4.50	4.00 @ 4.25
Stove	4.45 @	4.35 @ 4.75
Chestnut	4.00 @	4.00 @ 4.10

The Lehigh quotations are said to be very near the actual selling prices.

PHILADELPHIA.

Office of *The Iron Age*, 220 South Fourth St., PHILADELPHIA, October 12, 1880.

Pig Iron.—We have again to report a dull, heavy market, with even less disposition to operate now than during the weeks immediately preceding. Stocks of the lower grades are accumulating, and the companies are pushing these whenever there is reasonable prospect of a sale being made. Prices are not materially changed; in fact, asking rates are just about the same as last week, but concessions of 50¢ to $1 per ton would probably be accepted if the offer was made for a fair-sized lot. There is, comparatively speaking, less difficulty in moving the higher qualities, but these also are heavy, and would probably be sold at a similar reduction if offers were made by good parties. The Iron trade for the time being is in a most unsatisfactory condition; at current rates the furnaces have scarcely any margin for profit, and from present appearances there is not much room to hope for improvement in prices, and it is almost equally difficult to economize in cost of production. Deliveries are largely on contracts made earlier in the season, and the average price is, no doubt, a good deal better than could be realized if sales were made now. This, however, cannot continue indefinitely, and the outlook is rather serious for producers, who appear to have no alternative but to cheapen cost or suffer loss. Consumers are very much in the same position too. Bars, they claim, cannot be produced at less than 2.4¢, and it is impossible to sell at that figure except in a small way. The margin in all departments appears to be of the slenderest character possible, and, in one way or other, will have to be widened before business can assume its normal condition. There is a disposition, however, to wait patiently for developments in regard to the Presidential contest, better prices and larger profits being hoped for in the case of Republican success, and an inevitable cutting down predicted if the Democratic candidate is elected. This statement is necessary, in order to give a clear idea of the condition of the market; and although it is possible that the election may not cause prices to advance as expected on the one hand, and that values may not be cut down as predicted on the other hand, this certainly is the theory adopted by all shades of opinion. Sales during the week have been made within the following range of prices: No. 1 Foundry Iron, $24 @ $26; No. 2 Foundry Iron, $21.50 @ $22.50; Gray Forge, $19.50 @ $21; Charcoal Iron, $35 @ $38; Bessemer (American at furnace 1, 2 and 3), $25; Scotch Iron, very dull; Eglinton, $21 @ $21.50; Gartsherrie, small lots, $24 @ $25.

Muck Bars.—There is a fair amount of business, chiefly in small lots, which have been sold at $38.50 @ $39 at mill. We hear of one 500-ton lot sold for shipment to San Francisco. Prices are a little irregular, but the above quotations fairly represent the market.

Blooms.—The market is quiet, and sales during the week have been at about the rates last quoted, viz.: Cold-Blast Charcoal Blooms, $70 per ton of 2464 lbs.; Run-out Anthracite, $57.50; Sunken Scrap Blooms, $52.50 per ton of 2240 lbs.; and Northern Ore Blooms, $47.50 @ $50.

Structural Iron.—There is very little new business coming in, and the immediate condition of the market is one of extreme dullness. Manufacturers are quite sanguine, however, that a good deal of business will be forthcoming ere long, and in the meantime old contracts keep them pretty fully employed. Prices are slightly easier, and good buyers might probably shade the asking rates, which are as follows: Angles, 2.7¢; Beams, 3¢; Channels and Tees, 3.1¢ @ 3.2¢.

Plate and Tank Iron.—The demand has fallen off considerably, and it is quite likely that the rates quoted could be materially shaded for good-sized orders. We hear of an inquiry to-day which indicates the certainty of a more active market soon, and at 2.75¢ for Tank Iron bottom has probably been reached. For small lots we quote: Tank Iron, 3¢; C. No. 1, 3.3¢; C. H. No 1, 3.5¢; Flange Iron, 4¾¢ @ 5¢; Fire-Box, 5¾¢ @ 6¢.

Sheet Iron.—Buyers appear to have placed their heaviest orders, and manufacturers find a material falling off in the demand. The business to date, however, has been the largest ever done in this country, and there is no reasonable ground for complaints. Prices are easy and a little inclined to weakness, although nominally unchanged. Galvanized Iron is badly demoralized, and discounts are very irregular. Small lots may be quoted:

Common Sheet, No. 26 to 28	4¾¢
Common Sheet, No. 22 to 25	4½¢
Common Sheet, No. 16 to 21	4¼¢
Best Refined ¼¢ @ ½¢ advance on the above.	
Best Bloom Sheets, No. 26 to 28	7¼¢
Best Bloom Sheets, No. 22 to 25	7¢
Best Bloom Sheets, No. 16 to 21	6¾¢
Common Red Plates, 3-16 to 16	3.4¢
Blue Annealed, 3-16 to 16	3.4¢
Best Bloom Galvanized, discount	30 ⅌
Second quality, discount	40 ⅌

Bar Iron.—The market is devoid of interest, and there are no changes calling for special remark. Manufacturers find that it is impossible to reduce prices, and, in fact, such a course, in any event, would not be likely to increase the volume of business. The disposition seems to be to await the result of the elections, which it is expected will have the effect of stiffening prices or forcing a reduction in the cost of production. Business cannot remain in its present unsatisfactory condition; the margin of profit, we are informed from several trustworthy sources, is not over $1 per ton to the merchant, while the manufacturer claims to be equally unfavorably situated in regard to cost of production. There is a fair amount of business under way and consumption is steadily maintained, but the tone of the market is dull and heavy. Sales are usually at 2.4¢ @ 2.5¢ for Refined Iron, but out-of-town lots have been sold at 2.3¢ @ 2.35¢. Skelp Iron is quiet and very little business is reported; latest sales were at something below 2.4¢.

Steel Rails.—The tone of the market is slightly easier, and business during the week has again been done at a lower range of prices. Sales of 15,000 tons foreign Rails are said to have been made a day or two ago at about $57.50, at tide, and they are now offered heavily at about the same rate. American Rails are quoted at $60, at mill, and sales have been made on that basis. Manufacturers will accept orders for almost any delivery at $60, but the mills are so full that there is no undue anxiety to push business. A fair quotation would be about $58 @ $60, as extreme rates both ways.

Iron Rails.—Business in American Rails continues quiet, and very few transactions have been made of recent date. There is a heavy demand, however, and orders will have to be placed somewhere and soon, but the low price of English Rails attracts buyers, especially when required for Southern and seaboard deliveries. Orders for about 20,000 tons are under negotiation here to day, and the chances seem to be that the heaviest portion of the order will be given to a seller of foreign goods. Manufacturers ask $46 at mill for 56's, but as English Rails can be had at about same rate, delivered at Southern ports, it is difficult to meet buyers' expectations.

Old Rails.—The market has been relieved of a good deal of stock within the past week, but prices have not been greatly strengthened, although a decline may have been prevented. Quotations are the same as last week, $26 @ $26.50, and a good many lots have changed hands at the inside figure, but there is nothing at present to warrant the expectation of prices advancing.

Railway Supplies.—Spikes, $2.75; Fish Plates and Splice Bars steady at 2.4¢ @ 2.5¢; Track Bolts, $3.75 @ $4.50, according to specification.

Scrap Iron.—The market is a shade easier again, and Wrought is quoted all the way from $26 @ $29, according to quality. There is a superabundance of short Scrap which is difficult to sell. Selected quality moves more freely and at fair prices. Machinery Cast, about $20.

Nails.—Are very dull and prices difficult to quote, but $3 is as near as can be given for a general quotation.

PITTSBURGH.

Office of *The Iron Age*, 77 Fourth Avenue, PITTSBURGH, PA., Oct. 12, 1880.

General business continues active as can be expected under the circumstances, and, in some very important particulars, is in better condition than it was at the corresponding time last year, notwithstanding the political excitement which is waxing warmer every day. Manufacturers generally report that orders have fallen off very materially within the past few weeks, but most of them continue to have about all they can do in working up old contracts. Advices both from the South and West are generally of a most favorable character, nearly all the crops having been secured in good condition, and as farm products generally are bringing remunerative prices, and farmers have more money than usual, manufacturers have every reason to look for an active and healthy trade this winter.

Pig Iron.—There was rather more done during the past week, but the sales reported, while more numerous, were of an unimportant character, varying mostly from 12 to 25-ton lots, demonstrating that buyers are still adhering closely to the policy of purchasing as their immediate wants require. They will undoubtedly adhere to this policy until after the Presidential election. But, notwithstanding the protracted "lull," the outlook is not discouraging. It is very evident, in view of the large consumption for several months past, that stocks in the hands of consumers must be very much reduced, and an active market, and possibly better prices, may be reasonably expected before long. Some mill owners claim to have enough bought to run them until the close of the year, but there are few so situated. Mill and foundry yards generally are pretty well cleared, and another encouraging feature is that the supply in sale yards is comparatively light. While standard brands, both of Mill and and Foundry, are, as the rule, still held at former prices, there is no disguising the fact that the market is weaker, and we hear now and then of some unknown brands being offered at very low figures. In the present condition of the market, it would be impossible to effect a sale of a round lot unless it was offered at a very low price. We repeat former quotations, with the remark that they are nominal: Cold-Short Forge, $19 @ $20; Neutral, $21 @ $22.50; Red Short, cinder mixture, $23 @ $24; all-ore Red Short, $25 @ $26; Bessemer, $27 @ $28; Foundry grades, $23 @ $25 for No. 2 and No. 1. Sales of Eastern Cold-Blast Charcoal at $37.50 @ $40. Hanging Rock Cold-Blast Charcoal, $42 @ $45.

Manufactured Iron.—While the mills generally continue to be pretty well employed, there are but few new orders coming forward, and the decreased business, as in the case of Pig Iron, may be attributed chiefly to the political excitement. Were it not for this, both jobbers and consumers would no doubt be buying largely, anticipating future wants. It was hoped some time ago that the Presidential contest would have but little effect upon business, but the events of the past few weeks have demonstrated that these expectations were not well founded. With a diminished demand the market has materially weakened, and no one thinks of asking the extreme prices quoted some time ago. Bars may be fairly quoted at from 2.15¢ to 2.25¢ rates, 60 days, 2 ⅌ off for cash; Sheet Iron, 3.90¢ @ 4.10¢ for No. 24; Plate and Tank, 3.20¢ @ 3.25¢; Skelp, 2.25¢ @ 2.35¢; Hoop, 3.10¢ @ 3.20¢.

Nails.—The market continues in much the same condition as described in our last report, while some of the factories both here and in Wheeling are still in operation. They are working up old contracts. There are very few fresh orders coming forward, and business will no doubt continue dull from now on until the spring trade opens up. While manufacturers generally are still quoting full card rates, it is said that the West has been pretty well supplied at a "cut" of from 25 to 30 cents per keg under the card. Sales are being made here at $2.75 @ $2.85. The latter appears to be the regular jobbing price.

Wrought Iron Pipe.—There is a continued good demand. The mills are very busy, and prices are firm, but unchanged. Discount on Gas and Steam Pipe, 60 ⅌ @ 65 ⅌; on Boiler Tubes, 40 ⅌; Oil-Well Casing, 70¢ per foot, net; do. Tubing, 21¢, net.

Steel.—While the demand is not as brisk as it was a month ago, there is still considerable inquiry. The mills are busy and prices are steady. The Steel business does not appear to have been affected much by the political excitement. For some years past there has been a steady demand from season to season, while the iron business has been very spasmodic. The growth of the American Steel industry within a brief period has been very rapid, and the largely increased consumption, owing to its reduced cost, has had considerable to do with curtailing the iron business.

Muck Bar.—There have been no sales reported for several weeks, in the absence of which we quote, nominally, at $38 @ $40, cash at mill.

Railway Supplies.—New orders are coming forward sparingly, but an increased business is looked for after the election. Prices weaken, in sympathy with Iron, but without quotable change. Spikes, 2¾¢, 30 days; Fish Bars, 2.25¢; Track Bolts, 3½¢, with square, and 4¢, with hexagon nuts. No late sales of Steel Rails. An attempt was made recently to place an order, and a number of mills were written to, but, with one or two exceptions, they all responded that they were "full up" for this year and desired no more orders for the present. Old Iron Rails quoted, nominally, at $29 @ $31.

Scrap.—The market for all kinds of Scrap continues dull, being affected, like all other branches of the Iron business, by politics, and prices are weaker, but without quotable change, as compared with last week. No. 1 Wrought, $27 @ $28, net; Wrought Turnings, $21 @ $22; Car Axles and Springs, $35 @ $36; Old Car Wheels, $30 @ $33, gross; Cast Turnings, $16 @ $17; Machinery Metal, $21 @ $22.

Coke.—While there is an absence of excitement, business keeps up well, considering the depressed condition of the pig iron business, and but for the difficulty in getting cars business would be still larger. The production, while large—some 30,000 tons per week—does not appear to be in excess of the consumption, as there is no accumulation and prices continue to rule steady: $1.50 per ton, free on cars at ovens; $1.65 @ $1.75 for small foundry orders.

Coal.—The railway operators continue to have an active trade, as is usually the case at this season, and the continued suspension of river navigation tends to increase the business of those who have rail communication. However, those of the river operators who have Coal in the down-river markets are very well pleased with the situation, as the source of supply being shut off, stocks are being reduced and prices stiffened.

Window Glass.—There has been no important change since our last report. Some firms are pretty well supplied with orders, but others are less fortunate, and all agree in reporting the market in an unsatisfactory condition. No change in discounts.

Petroleum.—There has been no important change in the situation since our report of last week. The market for Crude continues fairly active and prices are steady, with apparently little prospect of any material change, either one way or the other, during the remainder of the year. In regard to Refined we can report a very fair home business, but there is very little being made for export. Prices are higher, and a still further advance is not improbable.

CHATTANOOGA.

Office of *The Iron Age*, Market and 8th Sts., CHATTANOOGA, Oct. 11, 1880.

We are between fall and summer trade in this section, and there is, consequently, a quieter trade than prevailed at the end of the one, and slower than we shall have when fall fairly sets in. Manufactured articles generally maintain the rates of September, though there is some concession always when business is dull. The weather is cool and bright.

Pig Iron.—The demand has been fair. Buyers generally filled up pretty well in September, and stocks must work down a little in the hands of consumers before the trade will be brisk. We quote: No. 1 Foundry, $25 @ $27; No. 2 Foundry, $23 @ $25; Gray Forge, $20 @ $22; White and Mottled, $18 @ $20; Car Wheel Metal, $40 @ $45.

Miscellaneous Articles.—There is no change in this list: Wrought Scrap, $20 @ $24; Cast, $15 @ $17; Old Wheels, $28 @ $30.

Ores.—The prices of Ores are controlled by some large and long-time contracts. These are likely to maintain present rates for some time. We quote: 50 ⅌ Brown Hematite, per ton, $2 @ $2.75; Red Fossil, $2 @ $2.25.

Nails.—Are fairly active at last week's quotations. The building season here is just commencing, and the purchases for consumption are therefore larger than usual. We quote $3.25 rates, usual discount on 200-keg lots and for cash.

Manufactured Iron.—Bar is fairly firm and other articles in the list steady. We

quote: Bar, $2.40: Railroad Spikes, $3; Track Bolts, $4; Trestle Bolts, $4.50; Fish Plate, $2.50.

Coal—Has not been advanced to manufacturers. The Knoxville combination has proved equal only to creating a flurry. We quote run of mine at $1.65 @ $1.75 at mills; Lump, 12¢ @ 15¢ per bushel.

Steel and Iron Rails.—The market is strong. Iron, $46 @ $48; Steel, $60; Small T, $55.

Lead.—We quote: Pig Lead, 4½¢ @ 5¢. Bar Lead, 5¾¢ @ 5¾¢, with an improving demand.

Steel.—Plow Slabs, 3 in. and under, $4.70; Black Diamond, ordinary sizes, 13¢.

BOSTON.

October 8.—The market continues to rule dull and in favor of buyers, and the latter are rigidly restricting their purchases to present wants. Pig Iron can be bought at lower figures this week than last, and supplies are increasing. And yet a large consumption of Iron is in progress at all of the foundries and rolling mills. *American Pig Iron* has sold at $24.50 @ $25.50 for No. 1 X; $20.50 @ $21.50 for No. 2 X, and $20 @ $21 for Gray Forge. These prices are f. o. b. at the port of shipment. Small spot lots will command $2 per ton higher. Freights are easier. *Foreign Pig* is also easier, though held with considerable firmness by some parties. There have been sales of Gartsherrie at this point the past week as low as $22, and that figure is doubtless as high as could be obtained for round lots; but a good deal of the Iron here is held above the market, and as high as $24 is asked for Glengarnock, and one lot of Coltness is even held at $28. We quote $21 @ $21 50 for Eglinton, $22 @ $23 for Glengarnock and Gartsherrie, $24.50 @ $25 for Coltness and Langloan, and $19 @ $21 for Middlesbro' English. *Old Rails* are nominally unchanged, and we quote $29 @ $30 for American and $26 @ $27 for Foreign. *Manufactured Iron* is in moderate but steady demand, and prices show an easier tendency. The easier feeling in raw Irons causes buyers of finished stock to operate very cautiously. We quote Bars at 2⅜¢ for Best Refined, and 2¼¢ for Common. We quote Norway, $4.15 for Bars and $5.15 for Shapes; Nails at $3.15 per keg. Plates at 3¼¢ for Tank, 3½¢ for C. No. 1, 3¾¢ for C. H. No. 1 Shell, and 4¼¢ @ 5¢ for C. H. No. 1 Flange. *Copper* continues quiet and steady. Ingot has sold at 18¾¢ @ 18⅞¢ for Lake, and 18¼¢ for Baltimore and English Best Selected. These prices are for large lots, smaller parcels being ½¢ higher figures. There has been no change in the combination prices of Manufactured Copper. We quote: New Sheathing Copper, 26¢; Braziers', 28¢, and Bolts, 28¢; Bottoms, 31¢; American Yellow Sheathing Metal, 17¢ @ 18¢; Yellow Metal Bolts, 20¢, and English Yellow Metal Sheathing, 14¢, in bond. *Lead* is dull and easier, and we quote round lots at 4¾¢ @ 4⅞¢, and smaller parcels at 5¢ @ 5¼¢. The prices of manufactures are unchanged, as follows: Bar, 6½¢; Pipe, 6½¢; Sheet, 7¢; Tin-lined Pipe, 15¢; Tin Pipe, 40¢; all less 10% to the trade. No. 1 Solder, 11½¢. *Spelter* is dull and without any quotable change. We quote the market nominal at 5¢ @ 5¼¢ for Western, and 4¾¢ @ 5¢ for Remelted. Retail lots command ¼¢ above these figures. *Tin* has ruled somewhat firmer since our last, but the transactions have been moderate. We quote Straits fair at 20¢ for good-sized lots. Retail lots command 20½¢ @ 21¢. *Tin Plates* are in moderate demand, and prices rule in buyers' favor. We quote large lots as follows: Charcoal Tin.—Melyn grade at $6.50 @ $6.75 for I. C., and $8.25 for crosses; Allaway grade at $6.25 @ $6.37½ for I. C., and $7.75 @ $7.87½ for crosses. Charcoal Ternes at $5.75 for Dean grade, I. C. 14x20, and $11.50 @ $12 for ditto ditto 20x28. Coke Tin at $5.12½ @ $5.25 for B. V. grade I. C. Coke Ternes at $5.37½ for 14x20 and $10.50 @ $10.75 for 20x28.—*Commercial Bulletin.*

LOUISVILLE.

Messrs. Geo. H. Hull & Co., Commission Merchants, report to us as follows, under date of October 9: The market continues very quiet. Manufacturers are not buying for future wants at all, but are buying to cover contracts as made. The volume of sales is much larger than last year. We quote, for cash, as below:

FOUNDRY IRONS.	
No. 1 Hanging Rock, Charcoal	$29.00 @ 30.00
No. 2 " " "	27.00 @ 29.00
No. 1 Southern, Charcoal	26.00 @ 27.00
No. 2 " "	24.00 @ 25.00
No. 1 Hanging Rock, Stonecoal and Coke	26.00 @ 27.00
No. 2 Hanging Rock, Stonecoal and Coke	24.00 @ 25.00
No. 1 Southern, Stonecoal and Coke	26.00 @ 27.00
No. 2 " "	24.00 @ 25.00
"American Scotch"	25.00 @ 26.00
Silver Gray	25.00 @ 27.00
Scotch	30.00 @ 31.00
MILL IRONS.	
No. 1 Charcoal, Cold-short and Neut'l	23.00 @ 24.00
No. 1 Stonecoal and Coke, Cold-short and Neutral	22.50 @ 23.00
No. 2 Stonecoal and Coke, Cold-short and Neutral	21.00 @ 22.00
No. 1 Missouri and Indiana Red-short	27.00 @ 28.00
White and Mottled, Cold-short and Neutral	20.00 @ 21.00
CAR WHEEL AND MALLEABLE IRONS.	
Hanging Rock, Cold-blast	35.00 @ 44.00
Alabama and Georgia, Cold-blast	35.00 @ 42.00
Kentucky, Cold-blast	35.00 @ 42.00

W. B. Belknap & Co., Iron and Steel Merchants, Nos. 113 and 115 West Main street, report to us as follows under date of October 9: Business continues fair in most lines, especially south of us. If prices are a little weakish they are low enough to base reasonable confidence upon, and, as goods are going largely into consumption, there is no complaint from buyers. Some of our most careful merchants are not hesitating to stock up moderately. Light Sheet and Nails are in excellent demand. The meeting of Louisville and Nashville Railroad stockholders, held here this week, resulted, after the resignation of Mr. Newcomb, in the election of Mr. E. H. Green, of New York, to the presidency.

CINCINNATI.

Messrs. E. L. Harper & Co., under date of October 11, write us as follows: The market is quiet, and there is no probability of much increase of demand until after the election. The mills and foundries are running full, and the heavy consumption of Pig continues, while that article itself is, for the present, considerably neglected. It is expected an active movement will commence when the present causes of distraction are past. Quotations same as last:

	4 mos.
FOUNDRY IRON.	
No. 1 Hanging Rock Charcoal	$29.00 @ 30.00
No. 1 Strong Neutral Coke	27.00 @ 28.00
No. 1 American Scotch	22.00 @ 24.00
GRAY FORGE.	4 mos.
Neutral Coke	22.00 @ 24.00
Cold-Short	20.00 @ 21.00
CAR WHEEL AND MALLEABLE.	4 mos.
Hanging Rock, Cold-blast	42.00 @ 45.00
" Warm-blast	33.00 @ 35.00
Southern Car Wheel	35.00 @ 40.00
Lake Superior, Nos. 1 and 2	33.00 @ 35.00
" Nos. 3 to 6	35.00 @ 37.00

RICHMOND.

Mr. Asa Snyder, Iron Merchant and Furnace Agent, writes as follows under date of Octocer 12: The following figures may be regarded as the basis of present operations:

Scotch Pig Iron	$24.00 @ 27.00
American Scotch Pig Iron	26.00 @ 29.00
No. 1	26.00 @ 28.00
No. 2	21.00 @ 24.00
No. 3	20.00 @ 22.00
Mottled and White	19.00 @ 20.00
Virginia Charcoal Wheel Iron	26.00 @ 40.00
Old Rails	25.00 @ 26.00
Wrought Scrap, No. 1	23.00 @ 24.00
Cast, Machinery Scrap	21.00 @ 22.00
Richmond Refined Bar Iron	2.6 @
Horse Shoes, Tredegar	@ 4.00
Mule "	@ 5.00
Old Dominion Nails	@ 3.25

For lots of 200 kegs, 10¢ per keg less.

Last week's quotations of Nails should have been $3.25 instead of $3.

Our English Letter.

Review of the British Iron, Steel, Metal and Hardware Trades.

(From our Regular Correspondent.)

London, Eng., September 27, 1880.

THE TRADE OUTLOOK

is confessedly fairly good; yet the actual state of affairs is decidedly weak and vacillating. The "head and front of our offending" in this particular is still Glasgow, wherein is centered the source of the temporary paralysis which seems to have smitten the iron trade of this country. I have on former occasions called attention to the singularly powerful influence exerted by the Glasgow market over all the other iron-making centers, and this new instance merely serves to support the argument. Scotch iron has fallen; therefore there has been a marked decline in Cleveland and all other British brands of pig. It does not seem to be of high importance how or why the course of prices at Glasgow may be sent up or down, but the result elsewhere rarely, if ever, fails to correspond to the Northern trade barometer. All iron men must, and do, know the extent to which Glasgow prices are under the influence of speculation; yet, whether the bulls or the bears on the Clyde have the upper hand for the time being, the English markets promptly follow suit, and not a few of the Continental centers yield obedience to the same unwritten law. This is, of course, flattering to the influence of the gentlemen who run the Glasgow Exchange, and now and again it may be right; but in the main I don't think it speaks highly for the intelligence of those who are so easily led. Were Scotch prices invariably the outcome of what is by courtesy termed "legitimate trading," I suppose there would be nothing more to be said on the subject; but when the contrary is the rule rather than the exception, one's wonder not unnaturally increases. Within the past week or ten days Scotch pigs have continuously declined in value, both warrants and makers' brands being now within an ace of the cost of making the iron. Some of this fall is justly attributable to the uncertainty existing as to the extent of the future production—an uncertainty which has been mysteriously solved by a further meeting of the Scotch ironmasters, at which it has been decided that each furnace owner shall do as he "darn pleases," instead of a rigid adhesion being demanded to the former resolution restricting the total number of operative furnaces to one-half of the number built. It is also alleged that the failure of a broker who held 25,000 tons on warrants has facilitated the downward run of quotations, a circumstance which is not improbable in the present weak state of the market. Then, again, the shipments do not compare well with those of the corresponding period of last year, although a year ago iron was being shipped in a speculative and foolish manner, whereas the American demand is now almost *nil*, and 98 per cent. of the shipments are on square consumptive orders. At the time of writing warrants are now lower than for many months past, and it does not seem at all certain that they will again rapidly advance in view of our latest news from your side. As with Scotland so with Cleveland, Yorkshire, Derbyshire, Staffordshire and the rest of the iron smelting centers. All have "caught cold" from the keen Scotch air, and scarcely an individual furnace owner has sufficient confidence to resist the importunate buyer who has the golden wherewithal at hand. Even the hematite firms have been infected, and are said to be willing to sell their pigs "on very reasonable terms." Generally summarized, then, our iron trade has relapsed, and is indubitably out of sorts. How long the backwardation will last no one knows or, pretends to know, although some of the uncommonly knowing ones predict a renewed burst of confidence immediately ahead. They may be right or they may be wrong. I suppose they must be either one or the other. My own opinion is that in the absence of stimulating advices from your market, we may look forward to a further "slow" period, during which there will be no actual poverty of business, but also no briskness and nothing approaching to even the shade of the departed and deeply lamented "boom." The harvest, although excellent in the South and East, seems to hang fire in the North, so that we have not yet begun to feel that quickened circulation which should shortly ensue. As regards the finished iron branches, I have been credibly and solemnly informed to-day that "there isn't any," my informant being a "commercial" who skims about the country after all the cream he can get hold of. He reports matters dull, but from other sources I hear that money is decidedly easier of collection, and that things are "just kept moving" by the majority of the manufacturers. For bars the call is quiet, but as regards sheets, plates, angles and so on, the output is fairly good. It is said—I don't know with what truth—that some of the Staffordshire houses are firmly declining to sell forward at present figures, in the belief that the list rates will certainly be advanced at quarter-day. These gentlemen may have hitherto undiscovered sources of information, or they may be building their hopes upon the possibilities of the wages revision now in progress of being settled for the next three months, but I confess that ordinary persons do not expect anything of the kind. It is, indeed, an open secret that, since Messrs. Philip Williams & Son broke away from the £8 list rate, bars in any quantity have been obtainable at £7. 10/, and between that limit and £8, iron of reputable makes having been disposed of, minus the marks, in order to keep up the "list" fiction. That being the case, and viewing all the surroundings, I fail to perceive on what reasonable grounds an upward movement in prices can be looked for at the quarterly meetings. These gatherings are due early in October, and pending their occurrence the remainder of the present quarter is scarcely likely to be characterized by any especial vitality of business. The end of the quarter is at all times a period of relative quiescence, and it is certain to be the more so on this occasion by reason of the disturbing influences of the time being.

SCOTCH PIG IRON

has been so fully alluded to in the foregoing paragraphs, that I will only give its statistical features in this place. At date there are 82 furnaces blowing, against 68 a year ago. In Connal's stores there are 472,398 tons, against 311,727 same date in 1879. This represents an addition of 2495 tons during the week. Shipments for last week were about 50 per cent. under those for the corresponding period of 1879, when the boom was beginning to cut its youthful capers. To September 18 the total shipments of Scotch pig had increased 149,109 tons this year. On the other hand, Cleveland pig iron imports into Scotland have decreased 5112 tons since Christmas last. Ballast pig iron is now down to 45/ alongside.

Writing from Glasgow, September 24th, James Watson & Co. said: "The market for Scotch pig iron has been very depressed this week, owing to the absence of legitimate business and the desire of holders to realize. The prices of makers' iron have also declined in sympathy with warrants. On Monday the market opened flat, with an immense business done in warrants between 49/9 and 48/10, cash. On Tuesday the market was irregular; opening at 49/7½ it declined to 49/ and closed at 49/2. On Wednesday the market was flat, with a fair business done from 49/ to 48/8, closing at 48/10 per ton. Yesterday forenoon a small business was transacted between 48/7 and 48/5½, cash, and in the afternoon there was no market. To-day a good business has been done between 48/6 and 48/2½, closing at 48/4½ per ton. The shipments last week were 10,788 tons, as compared with 15,650 tons for the corresponding week of 1879." We quote:

	No. 1.	No. 3.
G. M. B., at Glasgow	50/6	48/6
Gartsherrie, at Glasgow	58/	51/6
Coltness, "	58/	52/6
Summerlee, "	58/	50/6
Langloan, "	58/	51/6
Carnbroe, "	55/6	51/6
Calder, at Port Dundas	58/	50/
Glengarnock, at Ardrossan	55/	51/6
Eglinton, "	51/6	49/6
Dalmellington, "	51/6	49/6
Shotts, at Leith	60/	54/

At these low figures investors are being attracted, the present plethora of capital unemployed in this country just now rendering the outlook for fair home investments and speculation keener than usual.

DEPHOSPHORIZATION,

although pretty generally accepted as *une fait accompli* in the metallurgical world, is by no means meeting with that rapid adoption in Great Britain which was anticipated for it by its inventors. I say "inventors" advisedly, because I am given to understand on excellent authority that Messrs. Thomas, Gilchrist, Snelus and Riley, are each and all interested in the patents, the two latter having been admitted, as it were, owing to the fear that their claims might conflict with those of Messrs. Thomas & Gilchrist. At the present time all the English and Welsh rail makers are professedly awaiting with much curiosity, not to say anxiety, the results of the working of the new plant at the Eston Works of Bolckow, Vaughan & Co., where two new 15-ton converters (the largest hitherto erected in this or any other country) have been specially put to run on basic principles. These converters have been started, and rumors are already in circulation reporting the "complete success" of blows on the Thomas-Gilchrist plans. Now, the real facts of the case are that the new plant has not yet been tried at all on any pigs other than Bessemer hematites, on which they are at this date being run. The basic process will not be commenced until the men have grown thoroughly familiar with the plant and its peculiarities. In adopting this course I think Mr. Winsor Richards has done wisely, and has rendered his success in dealing with ordinary phosphorous pigs the more certain. The opponents of dephosphorization, however, vehemently attack its product, which they aver is neither more nor less than a superior sort of ingot iron, destined, in their opinion, to replace ordinary puddled iron. Steel it is not, say those gentlemen, and do the work of steel it will not. This is the opinion of Mr. Thomas Hampton, Mr. Lowthian Bell and many other metallurgists, including the redoubtable Mr. Pourcel, of Terrenoire, and other Continental experts. The controversy, thus far, seems to rule somewhat in favor of the old-style Bessemerists, but the weapons of both parties are making terrible havoc among the ordinary classes of ironmasters, and the puddlers are contemplating their early extinction. I have been expecting to hear Mr. A. L. Holley's views on the subject, but the strength of that gentleman is apparently not as yet equal to unusual efforts of any kind.

CLEVELAND PRICES

are as follows, usual conditions:

No. 1 Foundry	43/6	No. 4 Forge	37/6
2 "	41/	Mottled	37/
3 "	38/6	White	36/6
4 "	38/	Kentledge	41/

Shipments average about 3000 tons daily, and stocks in Connal's stores at Middlesboro are 95,000 tons. There are 116 furnaces blowing in Cleveland, all on "full bore," and no stock worthy of being mentioned accumulating. This is a circumstance of some note, and is pointed to by the "bulls" as a strong argument in favor of another rise.

HEMATITE PIGS

are scarcely so firmly held, mainly owing to the less confident tone of the recent reports from your market. At the same time there is no special weakness, the producers being too well engaged (some until February next) to be timid. Prices, varying 1/ or 1/6, according to shipping ports, are:

	No. 1.	No. 2.	No. 3.
Cleator	77/6	76/	74/
Lonsdale	71/	70/	69/
Workington	71/	70/	69/
West Cumberland	71/	70/	69/
Lowther	71/	70/	69/
Moss Bay	71/	70/	69/
Harrington	71/	70/	69/
Solway	71/	70/	69/
Maryport	71/	70/	69/

THE TIN PLATE TRADE

would appear to be overshooting the mark as regards production, if we may credit the assertions made by a correspondent of the *Ironmonger*. This gentleman states that a manufacturer informs him that his own four mills have been making 480 boxes a week less than their capacity, for the whole of this year. This is equal to a reduction of the output for the nine months ending September 30 of 18,720 boxes at this one establishment. Supposing that the same rule holds good at all the 300 mills at present at work, it follows that there have been 1,404,000 boxes less made than could have been produced during the first nine months of the year, or at the rate of 1,855,000 boxes for the whole of 1880. In spite of this fact and these formidable figures a number of new mills are being erected, and several have just been started. It is alleged that these new concerns are so keenly competing for orders that they are the means of running prices down to the very low rates now current, their competition being so cleverly manipulated by the Liverpool buyers that quotations are at the mercy of these cute middlemen. Whether all this is true or not I cannot say, but I think the statements so made are pretty well founded. It is, at all events, tolerably certain that the producing powers of the trade are largely in excess of the average requirements of the various consuming markets, and the course of prices plainly shows that the restrictive policy of the manufacturers has as yet had little or no beneficial effects. At Liverpool ordinary cakes are about 16/ per box.

FROM SHEFFIELD

there is no news of especial moment. I hear, however, that the majority of the manufacturers in the leading industries of the town and district are pretty well engaged, and that their men are much better off than they were a year ago. House property is letting better—a sure sign of relative prosperity, seeing that so soon as trade droops the ironworkers, miners and other operatives crowd two, three or even more families into one dwelling, whereas when their wages are fairly good the spirit of independence asserts itself and the gregarious feeling is dispersed. I notice that the Sheffield *Independent* endeavors to defend the Sheffield workmen at Bridgeport from your criticism, but so far as I am enabled to judge the defense is of the "too candid friend" order, and not a little confirmatory of the accuracy and justice of your remarks. You will doubtless have perused the ingenuous article in its entirety. I will not, therefore, spoil its beauty by a hash! The controversy as to the relative merits and demerits of machine-cut and hand-cut files is being continued with some vigor. Both sides make a fair showing, and the latest evidence seems rather in favor of the machine cut goods. In this connection, it is worthy of note that the old trade union outrage spirit is still alive, a "rattening" case being reported as having occurred near Sheffield yesterday. The American demand for cutlery is well maintained, several of the larger firms having as much work on hand as they can get through. Joseph Rodgers & Sons are so busy, in fact, that I hear they are not unlikely to enlarge their already extensive premises. George Wostenholme, John Wilson, Brooks & Crooks, Harrison Bros. & Howson, &c., are also doing an eminently satisfactory turnover.

FOREIGN.

FRANCE.

(Moniteur des Interets Materiels.)

Paris, Sept. 26, 1880.—*Metals.*—Merchants are returning from the watering places and business begins to revive. Metals have, however, been inactive and in a few instances lower, except Copper and Lead, which have improved slightly. Tin has declined 5 francs and Spelter 1 @ 1.50 francs the 100 kilos. We quote at the close: Chili Bars, 158.75 @ 161.25; Ingots and Slabs, 166.75; Best Selected, 168.50, and pure Corocoro Ore, 167.50. *Tin.*—Banca, 225; Straits and Australian, 222.50; Billiton, 220, and English, 220 at Havre or Rouen. *Lead* at Havre, 38; at Paris, 39, and *Spelter*, 46 @ 47 francs. *Iron.*—This has again been a week of great weakness. Building, it is true, has remained very active, but competition among Iron merchants is so great that they are underselling each other continually. They now sell Iron for flooring at the same rate as Merchant Iron, say at 18.50 francs the 100 kilos.; the difference of 1 franc has vanished. At the same time, foreign rolling mills are making very low offers in this city, especially some German ones. Meanwhile Sheet Iron and heating apparatus remain in active request. At the North, makers belonging to the combination swerve from prices agreed upon at the last meeting under the pretext that Belgian competition compels them to accept lower rates. First-class Merchant Iron is now obtainable there at 17 francs and even below this. In the Haute-Marne transactions are not effected with ease, buyers hesitating considerably. Although officially they keep up in that district the quotation of 19 @ 19.50 francs with Merchant Iron, even small lots sell 1 @ 1.50 francs below this. *Coal* has become remarkably active; orders are more plentiful and larger daily, causing prices to rise. We now quote 50 @ 55 francs at Paris. In the North and the Pas-de-Calais there is a great demand; a good fall campaign is in prospect. St. Etienne is steady.

BELGIUM.

(Revue Universelle.)

Brussels, Sept. 25, 1880.—*Iron.*—Not much of a change can be reported. In spite of the considerable work on hand and the many orders still to be executed, our makers find it difficult to impart strength to prices. This remarkable weakness, which we are still inclined to think but temporary, is, in our estimation, chiefly due to two causes, viz., the bad effect which the low tenders made by producers apprehensive of a dearth of work has produced upon the market at late adjudications, and, furthermore, the large stocks still in the hands of dealers who bought in February on a brisk market at high prices considerably, anticipating requirements at the time, and, consequently, postponing fall purchases. We quote: Affinage Pig, 5 @ 6.50 francs; Moulage Pig, 7 @ 7.80; English Pig, 5.80 @ 6.29; Merchant Iron No. 1, 12 @ 12.50; ditto No. 2, 13.50; No. 3, 14.50; Common Sheet, 17.50 @ 18; Beams, 14 @ 15, and Steel Rails, 15.50 @ 16. The Solessin Company sold 5000 tons Beams for export at 13.50 francs for No. 1. Pig Iron remains 5 francs in Luxembourg; at Athus, 5.50; at Charleroi, 6 francs. *Coal.*—Great activity prevails in this fuel at the following rates: Industrial, 11; domestic, 12.50; half greasy, 18 @ 20, and lumps, 20 @ 22 francs.

GERMANY.

(Borsenhalle.)

Hamburg, Sept. 27, 1880.—*Iron.*—From Dortmund we receive this week the following genera weekly report: "No particular change is noticeable in Iron industry. In a few branches business flattens, while in others it has been looking up. Among the less brisk articles I may mention Merchant and Sheet Iron as well as foundry and Bessemer Pig; in these prices are less firm. The rolling mills would be glad to recieve fresh commands. The two species of Pig named are ruled by the quotations cabled from England. Other sorts of Pig, as well as Iron Wire, are firmer, and the demand improves. A considerable amount of activity is observable in all Iron and manufactures, to be shipped without delay for Russia, so as to reach that county ere the ice blockade puts a stop to shipments through the Baltic ports. Prices have undergone no change. We quote: Merchant Iron, 125 @ 135 marks; Sheet Iron sells by 5 @ 10 marks cheaper from here than it does from Duisburg; Coal has not improved, being offered in excess of the demand. Consumers are overrun by producers, agents and dealers, while stocks remain very large in companies' hands. As cool weather has begun, however, the demand may now soon revive. A good fall season is looked forward to, provided there be a sufficiency of freight cars; shipments down the Rhine from Bingen to the Dutch frontier have meanwhile been inaugurated." In Upper Silesia both Pig and Merchant Iron have improved. The blast furnaces now get 3 marks per cwt. all the way to April 1, 1881. The rolling mills get their basis of 12 marks the 100 kilos., currently, and have work enough on hand to last them for three months. Coal has also been quite lively in that region for the past fortnight; both consumers and dealers are laying in winter supplies. All companies have agreed to raise prices 1/2 per cwt. to date from October 1. *Metals.*—Lead has been very dull. We quote: English Pig, 17 @ 17.50; ditto Sheet, 17.50 @ 18; German Pig, 15.50 @ 16, and Spanish, 19. Copper is unaltered. We quote: Swedish Atvidaberg Ingots, 74; Drontheim Roeraas Rosettes, 74 @ 75; English Refined, 68 @ 69, and ditto Sheathing, 76. Tin is weak; Banca at 85 @ 86; Australian, 85 @ 86, and English, 86 @ 90. Spelter remains inactive at 18 25 @ 18.50, spot and to arrive; Vieille Montagne Sheet Zinc, 24.20; Silesian, 24 marks the 50 kilos.

HOLLAND.

(Koch & Vlierboom.)

Rotterdam, September 21, 1880.—*Tin.*—The better feeling alluded to in our last report has been of but short duration, for soon after a dull state of affairs made itself felt, turning prices in the opposite direction and causing Banca to be sold to-day at 49.25 guilders the 50 kilos. and Billiton at 48.50, against 52 @ 51.50 a week since, Sept. 28. Since the preceding, prices receded still further to 47.75 with Banca and 47 with Billiton, but on Friday higher London quotations caused a revival in the demand, without leading to very extensive dealings, holders being very stiff in their pretensions. To-day Banca would be obtainable at 50.50, and Billiton at 49.50.

STATISTICS OF BANCA SEPT. 28.

	1880. Slabs.	1879. Slabs.	1878. Slabs.
Deliveries in Sept	7,500	10,492	9,008
" since Jan. 1	91,544	104,117	87,296
Stock on warrants at Amsterdam	25,444	22,800	32,190
Stock on warrants at Rotterdam	7,075	12,630	20,978
	32,519	35,430	53,163
Stock in readiness for coming auction	70,954	66,177	31,248
Afloat	3,740	16,600	8,400
Total	107,213	11,207	92,811
BILLITON.			
Deliveries in Sept	7,021	5,709	8,234
" since Jan. 1	82,576	74,922	66,953
Stocks here and at Amsterdam	67,974	74,216	53,764

AUSTRIA.

(Austrian Trade Journal.)

Vienna, Sept. 25, 1880.—*Iron.*—The reduction of prices made by the Austrian combination of 1 florin per 100 kilos. on Pig and 1.25 on all rolled Iron, including sheets, has had a good effect upon the market, inasmuch as it has stimulated the legitimate demand, which had been checked by the previous uncertainty as to what course the United Makers would adopt. The Iron trade may now expand on a natural and more stable basis. In Hungary, also, matters are being restored to a sounder basis since then; the extreme irregularity in rates ceases, and the fall trade is allowed to develop under the stimulus of greater confidence in the immediate future. Pig Iron has till now not sold more extensively, nor have Sheets or Merchant Iron moved off in larger quantities since, but all castings are becoming very active, and the same may be said of Machinery and Railroad Cars. Our railroads will still require 15,000 tons of Rails; it is to be hoped, therefore, that our Rail makers may also lower the combination price, so as to prevent the said Rails from being bought abroad. In view of the more cheerful aspect which the fall trade now presents, Coal begins to display an extraordinary degree of liveliness in all quarters. We quote Pig Iron, 50 @ 52; Bessemer ditto, 55 @ 60; Merchant, 110 @ 127.50; Sheet, 160 @ 195; and Pillars, 123 @ 125 florins per ton. *Metals.*—Copper has been dull and weak, speculators keep aloof and consumption is trifling. Tin is too fickle to inspire any confidence. Lead is quiet and steady. Spelter is inactive. Quotations have remained unaltered since our last report, nor do we repeat them.

CHILI.

(Weber & Co.)

Valparaiso, August 16, 1880.—*Copper.*—In consequence of the decline in exchange, prices have been steadily rising, even higher than present European cable quotations justify. Sales, 11,241 quintals at $22.50 @ $23.65. *Nitrate.*—The question of the new duty alluded to in our last report remains unsolved. Prices have been stimulated by the fall in exchange, but dealings have been restricted, producers being mostly engaged in filling old contracts, and the few sales made have been for the most part resales. The government continues to charter vessels for consignments of Nitrate to Europe. The Antofagasta Company is also a charterer, but has so far not appeared in the market as a seller. Sales, 97,600 quintals at $4.10 @ $4.55, 96 %, Tattal and Iquique; 34,000 quintals Tattal on secret terms, and 15,500 Tattal at $4.40 for 95 %, and $4.45 for 96 % at 35/ to England and 40/ freight to the Continent. July shipments have been 286,170 quintals to Europe and 52,410 to the United States. Loadings 503,400 quintals, of

which 35,000 for the latter country. Total export from January 1 to August 1:

	Quintals. 1880.	Quintals. 1879.	Quintals. 1878.
To Europe	2,493,022	2,030,963	3,063,469
To the U. States..	373,232	138,914	428,186
Total	2,866,254	2,169,877	3,491,655

Coal.—Some unsold cargoes of steam coal have been ordered to San Francisco; one cargo brought $10.50. *Exchange*—has dropped to 25½d. @ 25¾d. 90 days sight on London per dollar.

A Primitive Mint.

A correspondent of the *Times* thus describes the process through which English rupees at present pass to bring them out from the Cabul Mint in the shape of Cabulee rupees:

In one of the rude sheds which I have described as running round the courtyard are two rows of small, round clay hearths elevated an inch or two above the floor, and depressed like a plate in the middle. A pile of rupees—generally 300—having been counted and weighed is placed upon one of these hearths in a carefully prepared bed of bone ashes and covered over with charcoal and wood. The charcoal is then lighted, and when well aglow, 4 lbs. of lead for every 300 rupees is added to the furnace. The lead, in combination with the bone ashes, separates, as is well known, the alloy. This first process converts the rupees into a dull, unsightly mass of silver, free, or nearly so, from alloy. The pure silver thus extracted is then carried to another shed, carefully weighed, and an amount of English rupees equal to its weight added to it. Rupees and silver are then melted together in a clay crucible, and the melted mixture is ladled by hand into molds, which give it the shape of flattened bars about 12 inches long. These bars are then taken to a third shed to be annealed by hammering and given the form of slender round rods. The next process is that of drawing these rods through a plate of iron perforated with round holes to give them a uniform circumference. This is done by means of a rude hand-wheel, after which the rods are cut by hammer and chisel into the length requisite to form the future rupee, each of which length is carefully weighed in a pair of scales. Any that are too heavy are handed to a workman whose business it is to slice off a fragment with his chisel; any that, on the contrary, are too light, are handed to another workman, who notches the little cylinder by a blow on his chisel, and inserts the required fragment into the notch. The cylinders are next carried to a fifth shed, and, after gently heating are hammered into small round disks, which have a yellowish white color. To remove this color and give them brightness they are next plunged into a cauldron of boiling water, in which they are boiled for some time along with apricot fruit and salt. This process imparts brightness to the dull disks of silver, and they are then ready for the last process they have to go through, that of stamping. This is, perhaps, the most interesting part of the operation. Two operators sit facing one another, half naked, on the ground, with a little iron anvil between them. Into the face of the anvil is inserted a steel stamp, destined to give the impression which the under side of the rupee will bear. One operator places the little silver disks with great quickness and accuracy upon the stamp; and the other, who is armed with a heavy hammer in his right hand, and a steel stamp bearing the inscription destined for the upper side of the rupee in his left, with one heavy, well-delivered blow, impresses the device on the soft lump of silver. Lastly, each rupee thus stamped is again weighed, and deficiencies in weight made up by the same rude process as noted at another stage of the work, the amended rupee passing once more under the hands of the stampers. The legend on the rupees coined by Ameer Shere Ali and his predecessors reads thus: On one side, "Ameer Shere Ali," or as the case may be; on the other, "Dár-ul-Sultanat-i-Kábul" (House of the Kingdom of Cabul). On the money which is now being coined under the temporary British rule, the first of these inscriptions is altered to "Sáhib-i-Zamán" (Master for the time), to indicate the provisional character of the government. The second inscription remains unaltered. Such is the simple process by which money is now being coined in Cabul. It certainly makes one stare by its very simplicity, and the absence of all secrecy, fuss, or show; yet it is perfectly effective, and the money turned out, though rough and unfinished, is excellent in quality, if inartistic in shape and appearance. It needs hardly to be said that the rupees coined as I have described contain only half the quantity of alloy which the English rupee does. I shall only add that the establishment, as now constituted, can turn out 25,000 rupees per day, and is capable of any extension.

Machine vs. Hand-Cut Files in England.

The strength of English prejudice against machine cut files is shown by a protracted discussion in the Sheffield newspapers as to whether machine or hand-cut files are better. A great many foolish communications, challenges, &c., have appeared, with occasionally a sensible letter among them. Mr. W. S. Wheatley, manager of the file department of the Carlisle Works, in a communication to the Sheffield *Independent*, says:

Having issued a challenge through your paper, after carefully considering the advantages and disadvantages of machine-cut files, and having had considerable experience in hand labor (having been a cutter 13 years, a forger by machine and hand eight years, have hardened by lead process two years, in the hearth two years), I did not enter into this affair without some practical knowledge. I had my challenge accepted, and I at once proceeded to take steps for a test according to my ideas. I took several files, flat 14 and 16 inches, some cut on one side, some bare, but all had one side cut by machine, and all one side by hand, consequently we had three first sides by machine, and three sides by hand-cut. I then hardened them carefully. This was the mode of test, on a piece of ⅞ square cast steel, of the quality of which we make our files: We timed every 100 strokes for 600 strokes upon each side, then gauged the steel every 100 strokes, and at the end of the 600 of each side, the result was in favor of 1-64th of an inch to the machine-cut file side, although the hand-cut side was not so far worn as the machine-cut side. I entered into the acceptation of the challenge with the understanding not to make the firm's name known, but whatever information I derived from the test, to use as I thought proper. And, in duty bound, in honor I give the above result. Unhesitatingly I affirm that it is no longer a question in many practical minds that hand-cut and machine-cut files are close on a par, and with careful management by experienced hands greater results will ere yet be attained. But I must state, as prices of hand-cut labor are at present, and with men determined on producing a good article, and with good material for both kinds of labor to be bestowed upon the files, the question, I maintain—until I am convinced of further progress being made—is still in favor, economically, with the men.

INDUSTRIAL ITEMS.

VERMONT.

The Howe Scale Company, of Rutland, are now running five nights each week.

The Fairbanks Company contemplate enlarging their scale works at St. Johnsbury one-third.

MASSACHUSETTS.

The American Shade Roller Company, of Watertown, turned out last year over 1,000,000 shade rollers and carpet sweepers at the rate of over 150 dozen a month. Their new factory is 200 by 50 feet and four stories high.

CONNECTICUT.

Leonard Bailey & Co., Hartford, manufacturers of the original Bailey planes, are doing a driving business to keep up with their orders.

The Hartford Machine Screw Company are building a new factory, with a capacity of running 600 automatic screw machines, for the manufacture of all grades of machine screws, from the size used in watches to the size used in the heaviest work. The structure will cover a space of 300 by 200 feet, will be built of brick and stone, and is made as nearly fire-proof as is possible. The machinery will be driven by a pair of Brown's engines of 125-horse-power each. It is expected that they will be running about the 1st of December.

P. Jewell's Sons, Hartford, are running at full capacity, and are having a larger trade and are employing more hands than ever before. Besides making leather belting, they also manufacture the leather for belting purposes. They have just filled quite a number of orders for foreign countries and have several now on hand.

The Pratt & Whitney Company are running nights and are six weeks behind on orders. Just now they are working on orders for some specialties to be delivered next March.

The Billings & Spencer Company, Hartford, are overrun with orders. Their trade on drop forgings has started up this fall exceedingly active; in fact, they are driven beyond their capacity. They have made three additions to their buildings within three months, the last one being 75 by 35 feet. This company has declared a quarterly dividend of 2 per cent., payable October 1.

The Vulcan Iron Works, New Britain, are erecting a new foundry, 100 by 50 feet, one story high. Their special line is malleable-iron castings, which has increased so largely that it now becomes necessary for them to extend their works.

The Taylor Mfg. Co., New Britain, manufacture a staple line of goods, such as combination locks, hardware specialties, all kinds of rivets, toy pistols, &c. They make a specialty of models for patent articles. Their trade is distributed all over the country and is steadily increasing.

The Stiles & Parker Press Company, of Middletown, are running at full capacity, and plenty of orders ahead. The establishment is one of the largest and best equipped of its kind in the country. They have just filled an order for a drop hammer for Costa Rica. Some of the heaviest punching presses in the country are made at this establishment. One shipped last spring to Harrington & Oglesby, of Chicago, for perforating sheet metal, weighed 8 tons, exclusive of iron feeding table, 26 feet long. To meet the increasing demand for their articles they have just built an addition to their machine shop, 60 feet long, of brick, and have added a 60-horse-power engine to their works, without shutting down or any delay. The heat was taken off in the foundry with the old engine, on a Saturday night after business hours, and the new one started up Monday morning on time, and no work was done on Sunday. At present 60 hands are employed.

The Meriden Silver Plate Company are making great improvements in their buildings. They have a new structure about completed, which measures 60 x 90 feet. All the other large establishments in Meriden are doing a profitable business and are running full time. The Britannia Company, Bradley & Hubbard, and Manning, Bowman & Co. are doing a driving business.

The Fairst Steel Company, New Britain, are doing a large business in the manufacture of steel felloes for the Pope bicycle, which are shipped to the Weed Sewing Machine Company at Hartford, whose works are largely devoted to the manufacture of the above bicycle.

NEW YORK.

Together with its approaches, the new Harlem Bridge will begin where Madison avenue now ends and reach to One Hundred and Thirty-eighth street, Morrisania. It will consist of two fixed spans at each end, each of 73 feet, and a draw span of two openings, each to be 150 feet long. This will make the entire bridge about 600 feet in length. There will be five stone piers and two abutments. The center pier is now completed. It is 47 feet in diameter at the base and 36 feet at the top. The second pier on the east side of the river is well under way. The side piers will be 16½ feet wide at the base, 5 feet wide at the top, and 40 feet high. The estimated cost of the piers is $70,000. The superstructure of the bridge will be a plain truss of iron. Its design has not yet been fully determined upon. The hight above high water of the middle span will be 28 feet, while that of the fixed spans will be 25 feet. The cost of the superstructure and approaches will be about $130,000. The roadway of the bridge will be 22 feet wide in the clear, and there will be sidewalks on each side 5 feet wide. In Morrisania, Madison avenue will be graded to the slope of the bridge from One Hundred and Thirty-seventh street. One Hundred and Thirty-eighth street and River avenue will pass under the approach. The masonry will be completed by January 1, and it is expected that the approaches and superstructure will be finished by July 1 of next year. The foundations of each pier are made by driving piles into the bed of the river and cutting them off at a level of 28 feet below high water mark. Upon these is built masonry of cut granite about 40 feet high. The piers are built in wooden caissons, and on these are floated over the piles and sunk with great accuracy. The piles are driven by a hammer weighing 3000 pounds, which falls 8 feet and moves the piles not to exceed one-twentieth of a foot at the last 10 blows. The piles are so driven into the river bed that they will sustain 20 tons each. The river bed here is of sand and gravel. Mr. McAlpine is the engineer of construction, and the contractor is John Beattie. The amount already paid out upon the work is $40,000.

In the United States Circuit Court, New York city, before Judge Blatchford, October 4, 1880, in the suit of the Pope Manufacturing Company, of Boston, against McKee & Harrington, of New York city, for infringement of the patents belonging to said company, relating to bicycles and velocipedes, the court, after a full hearing, has ordered an injunction to issue against McKee & Harrington for their infringement of said patents, restraining them from manufacturing or selling bicycles.

The city of Auburn has two machine shops, and these, with its other industries, are now in prosperous condition.

The Wrought Bit and Iron Company (controlled by the Clapp Manufacturing Company) expected to have their new rolling mill ready for operation October 1, but December 1 now would seem a more probable date. It will use scrap exclusively. Just north of the rolling mill they have begun to erect two large buildings, in which they will manufacture farm wagons. W. W. Crane has lately been successfully making some heavy castings—notably a large pair of shears for the new rolling mill. He is also turning out large numbers of the Jones water wheel, besides the usual run of jobbing and repairing.

Improvements have been in progress at the Albany iron works department of the Albany and Rensselaer Iron and Steel Company, and when they are done the department will be one of the most complete of its kind in the country. A new merchant train has been erected, which will enable the company to make anything that may be called for in the merchant bar line. Now shears, saws, straightening beds, &c., have been added, and all the arrangements have been completed for doing fine work. A new Belgian train, built by A. Garrison & Co., of Pittsburgh, Pa., will be placed in the mill. This will be used for wire, rod, or merchant iron. To this train will be added a complete set of shears, wire reels, straightening beds, &c. Railroad tracks, platforms and everything that can expedite work have been or are in the course of construction. Many new tools have also been procured for the machine shop. Numerous improvements have also been made in the Star Forge, a new train, among other things, having been added. The water mill has received numerous improvements.

PENNSYLVANIA.

The work upon the elevated railroad on Filbert street, Philadelphia, is being rapidly pushed forward and will probably be in operation in about four months. The bridge across the Schuylkill is completed, and trains loaded with stone ballast will soon be passing down the street. At the corner of Fifteenth and Merrick streets the buildings have been raised and excavations begun for the cellar of the new depot. At Sixteenth and Market streets the foundations for the new depot are being laid; while the whole iron superstructure of the northern half the square is now in position. When this work is advanced to such a degree that cars can be run underneath, the portion of the depot now in use will be taken down. From Sixteenth street to a point west of Twentieth the masonry work is now complete.

H. H. Coles & Co., No. 446 North Twelfth street, has the sole control of a good and reliable self-mousing hook for topsail sheets, blocks and hoists, a great improvement over the old method. It cannot slip, its hook is simple, cheap and durable. Their universal lathe dogs and adjustable tap wrenches are ingenious labor-saving devices. A large force is engaged on orders for home and foreign markets. The Universal Lathe is adapted to all sizes, from ⅛ to 4½ inches, without changing the dog.

A product of 20 freight cars a day at the Altoona shops seems to be insufficient to meet the demand. The company has built lately 23 new passenger locomotives, 65 freight locomotives, 99 passenger cars and 2000 freight cars.

The Mount Hickory Mill at Erie is running double turn in all departments, and has increased the number of puddling furnaces in operation from 10 to 13. Prospects good.

Mr. William Lauder, superintendent of the Kemble Coal and Iron Company's furnaces at Riddlesburg, Bedford County, writes us under date of the 1st inst. as follows: "We intend to start our other furnace to-morrow. It is almost seven years since we have had the two furnaces in operation at the same time, but during the panic we have always had one in, and have not lost a day."—*Bulletin of American Iron and Steel Association.*

After an idleness of some time, Reis, Brown & Berger's mill, at New Castle, started up single turn last week.

Orders are booked for months ahead at Bradley, Reis & Co.'s., New Castle, and all departments are on double turn.

The executors of the estate of the late Col. William Shirk sold the one-fourth interest in the pipe mill in Lebanon, which for many years has remained idle, to Col. D. S. Hammond, who held a one-fourth interest, thus giving him a full one-half. The interest of the late Amos R. Boughter was purchased by Artemus Wilhelm, so that the property is now held by Messrs. Wilhelm and Hammond. It originally cost $100,000.

Henry Potts, Jr., of the Potts Brothers Iron Co., limited, has been appointed assignee of the Chester Tube Works, at Chester, Del.

The Lancaster *New Era* says: "The fires have been lighted under Shawnee Furnace No. 2, and to-day we can report every iron industry in Columbia smoking. The blast will not be turned on No. 2 until next Monday, as the manager wishes to have the furnace as hot as possible before commencing work in earnest. In a few days the Chestnut Hill Iron Ore Company will have their three Shawnee Furnaces in operation. The Coleman Furnaces at North Lebanon are being got in readiness to be blown in at an early day. The masons and boiler makers have finished their work and the engine has been tested, giving fair satisfaction."

The Moselem Furnace was blown in on the 6th, owing to its not working satisfactorily, and also the condition of the iron market giving little encouragement to remain in. The furnace has only been in blast eight months and a half and is probably in fair condition, and will be repaired to go in blast as soon as practicable.

PITTSBURGH AND VICINITY.

A new glass company has been organized at Rochester, to be known as the Rochester Flint Vial and Bottle Works, Limited, with a capital stock of $20,000, 40 per cent. of which has already been paid in. The works will have a river frontage of 180 feet, and the shipping facilities, both by rail and water, are unsurpassed. One-half the stock is owned by Capt. D. A. and C. I. McDonald, of Woodlawn, and the other half of the shares are well divided among the leading business men of Rochester and vicinity. Prescription vials and bottles will be manufactured exclusively, in which a large force of workmen will be employed. The officers of the company are as follows: President, David A. McDonald; secretary and treasurer, C. I. McDonald; managers, M. Camp, William Miller and H. J. Speyerer; general superintendent, William Anderson.

The Lloyd Mill was started up last week, after being idle for five weeks for repairs. The bar mill is to run double turn.

The coke works at Youngstown have completed 240 ovens.

Singer, Nimick & Co. expect to have the new addition to their already extensive establishment in operation by December next.

The Cambria Iron Company fired their four hundredth coke oven near Connellsville last week. This makes a grand total of 500 ovens under the control of the Cambria Iron Company in the coke region.

The heaviest casting ever made in Allegheny County was successfully run on the morning of the 5th inst., at the Black Diamond Steel Works, Pittsburgh. The casting was the anvil block for the 17-ton steam hammer now being constructed at these works, and weighed a fraction over 160 tons. The time occupied in casting was 5¼ hours. It will be six weeks before the casting will be cool enough to uncover. The work of molding and curbing this monster was under the direction of Mr. Charles W. Lang, a young man less than 28 years of age, who seemed to be the only founder of Pittsburgh with nerve to undertake it.

The Pittsburgh Forge and Iron Company are building four new puddling furnaces, they being short of iron for their finishing mill.

OHIO.

Ford & Co., Tippecanoe City, Miami County, manufacturers of the Guard Wire Band Hub, have extended their buildings and added new machinery. They are now filling an order for fine wheels to go to Warnsdorf, Germany. They employ 75 to 100 hands.

Newark citizens talk of a $20,000 company to manufacture a boiler patented by A. H. Fowler, of that city.

The North American Cutlery Company, Painesville, are employing experienced men from Sheffield, England, and Connecticut in their scissors department, and are turning out from 20 to 30 dozen per day, the capacity of their works being 60 dozen per day. The building is a two-story brick, covering an area of 30 x 112 feet, with an addition of 30 x 40 feet. The officers of the company are: H. E. Fenton, president; H. Cole, vice-president; S. R. King, secretary, and S. R. Gray, treasurer. They report a steadily increasing trade.

All of the Bellaire glass works are in operation, except the window-glass works.

A. Magoon, general manager of Logan Furnace, is superintending the building of a large double-stack furnace by Boston capitalists, at Floodwood Station, Athens County.

The Wellsville Plate and Sheet Iron Company, after a varied and unsuccessful experience under its past management, seem to be prospering in the hands of the new company. They are now adding to their facilities by building two new boiling furnaces.

The Nail City Glass Works, at Bridgeport, started up on the 5th inst.

MISSOURI.

From the *Age of Steel* we condense the following regarding St. Louis and Missouri industries: The Cleveland Co-operative Stove Company have gotten to work at their new establishment in this city, several heats of metal having been successfully and satisfactorily run during the current week. It is contemplated to make the capacity of these works such as to supply all of the demands made upon the company from this section of country, and not draw upon the parent works at Cleveland. The Missouri Foundry and Car Works are very busy; the foundry in manufacturing car wheels and the necessary castings to accompany them, and the car works in making freight cars, for which they have demands exceeding their capacity to fill. The hum of busy industry pervades every department of the Harrison Wire Works establishment. Timmerman's machine shops are full of heavy work; they are among the busiest places in St. Louis. Conrad Siebel's brass and copper works are being run full time on brewers' and bottlers' special work. Helmbacher's forge and rolling mills are full of work, manufacturing merchant iron, car axles, &c. Curtis's stove works are pressed to supply the demand made upon them for their excellent quality of stoves. Geo. J. Fritz's machine shop is full of miscellaneous work. The Medart Pulley Company are full of work filling orders. McDonald's forge and rolling mills are running as usual on car axles. The Tudor Mills are manufacturing railroad spikes in unusual quantities. J. G. Stockstedge & Bro., bell founders, are as full of work as ever. Bells are in demand. The Great Western Glass Works are running full time on druggists' and similar lines of ware. The French Window Glass Works are running full time. Hager's hinge factory is running full time on specialties. The St. Louis Wire Mill Company are now nicely ensconced in their new establishment, and are turning out large quantities of wire. Everything is working to a charm about the place.

KENTUCKY.

Ashland Furnace is making an average of 50 tons of good No. 1 iron per day, using only raw coal for fuel.

The Norton Iron Works, Ashland, are running full time, turning out their average quantity of iron and nails. The factory is making near 5000 kegs of nails per week and shipping them as fast as made. The furnace is working well, making over 50 tons of good No. 1 iron per 24 hours.

ILLINOIS.

Work on the new Pullman Car Works, at Pullman, near Chicago, is being pushed with great activity and the place already looks like a large manufacturing town, where one year ago not a building was to be seen. The exterior of the Allen Paper Car Wheel Works is finished and work on the inside progressing rapidly.

The Union Iron and Steel Company, Chicago, consumed 47,000 tons of ore last year. The amount will be much greater this year if the new furnaces are started. Their output of pig metal was 32,000 tons; of steel rails from 250 to 300 tons per day. They employed on an average 1000 hands and used 59,000 tons of coal and coke.—*Industrial World.*

The operations of the Northwestern Car Shops, Chicago, are more extensive at present than at any previous time in their history. There are 540 men constantly employed, who turn out eight cars per day. The works, which occupy 240 acres of ground, consume over half a million feet of lumber each month; a large number of wood-working machines have recently been introduced. Thirty new caboose and 220 box cars are now being turned out, and an officers car is being constructed which will be a model of beauty. This will contain an iron attachment at the rear of the car under the platform which will keep out the dust, and a Baker heater, with all the appliances for culinary purposes. It will be completed during the present month. Ten first-class 50-foot coaches are also being made, to be fitted up with all the latest patents to prevent accidents. They will be upholstered with seat springs and other auxiliaries to comfort and convenience. The works use 60,000 pounds of castings, 200,000 pounds of bar iron, 50,000 pounds of sheet steel and 20,000 pounds of sheet iron each month. Twenty locomotives are being constructed, 17 x 24 cylinder, for freight purposes.—*Industrial World.*

The Union Iron and Steel Company, Chicago, have decided to engage extensively in the manufacture of railroad frogs, crossings, switches, &c., and for this purpose are building the largest and most complete shops in the country. This promises to be an important addition to Chicago's industries. The new blast furnaces of this company are nearly completed.

ALABAMA.

Eight of the eleven charcoal furnaces in this State are in blast, and all of the coke furnaces that are completed. The Alice Furnace is not finished yet. This is a better showing than this State has made for some time,. Most of the furnaces are sold ahead, there not being 2000 tons on the furnace banks unsold.

GEORGIA.

The Rogers Furnace has just blown in.

The Bartow (Coke) Furnace, after being refitted, has just gone into blast.

MICHIGAN.

The Spring Lake Furnace, at Fruitport, made on the 18th inst. 47 tons of pig metal, running altogether on ore from the new Boston mine, the yield of which was 68.36 per cent., the largest percentage ever obtained from any Lake Superior ore in the blast furnace.—*Mining Journal.*

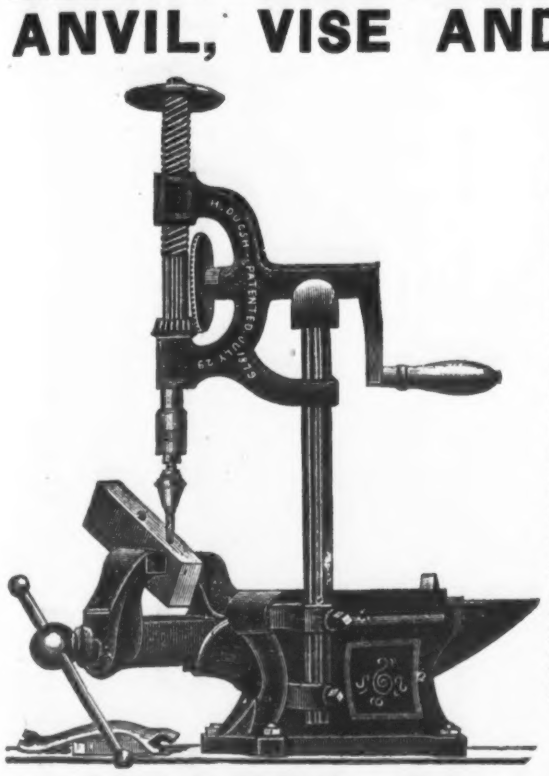
The following table exhibits, in gross tons, the total lake shipments of ore this season from Lake Superior, up to and including September 22d, together with the amount shipped during the corresponding period last year:

Where from.	1879.	1880.
Escanaba	498,376	863,873
Marquette	412,260	509,731
L'Anse	32,201	40,800
Total	942,837	1,414,404

Showing an increase of 471,567 gross tons. —*Mining Journal.*

It is reported that Messrs. Bolckow Vaughan & Co., Limited, have been very successful with their preliminary trials to their new converters at Eston Steel Works. They have two 15-ton converters now in operation making steel from Cleveland iron, but up to the present they have been content with 10-ton blows. The quality of the steel—or, more properly called, ingot iron—has given every satisfaction, and it is expected that they will henceforth continue to convert steel from the native ores by the Thomas-Gilchrist process on a large scale.

ANVIL, VISE AND DRILL.



This machine was first made by a practical mechanic for his own use, and to meet a want which nothing in the market would fill. It was so highly regarded by all who saw it that he was minded to get it patented and manufactured for the market. When it was brought to our attention we saw at once its great utility, and bought the exclusive right for the whole United States. We believe it will come into general use as fast as its merits become known. The anvil face is 4x8 inches, and hight 6 inches. Width of vise jaw, 3½ inches; steel drill press, with adjustable chuck to hold ½-inch drills, and all smaller sizes. The article to be drilled can be held firmly in the vise, so as to be drilled at any angle, or if it is too large for the vise it can be drilled on the anvil. The drill may be removed when not in use. Price for the whole, $18. Weight, 80 pounds. The vise and anvil are complete without the drill, and are sold for $10; weight, 60 pounds. For all jobbing shops, it is worth much more than it costs. Farmers can do with it many jobs which otherwise would have to be sent to the shops. All Hardware dealers who do not keep them in stock will furnish them on demand, or we will send them on receipt of the price.

MILLERS FALLS CO.,

74 CHAMBERS ST., NEW YORK.

HEATON & DENCKLA,

Hardware Commission Merchants,

507 Commerce Street, Philadelphia.

E. & G. BROOKE'S "Anchor Brand" Nails, Brads, Spikes, &c.
MALLORY, WHEELER & CO.'S Door and Pad Locks.
UNION MANUFACTURING CO.'S Butts.
AMERICAN SCREW CO.'S Screws.
D. R. BARTON TOOL CO.'S Edge Tools, &c.
FRANCE'S Shutter Holders.
Anti-Window Rattlers, Brass and Nickel-Plated.
WESTERN FILE CO.'S Cast-Steel Files.
AMERICAN SHEAR CO.'S Shears and Scissors.
H. M. MYERS & CO.'S Shovels, Spades and Scoops.
STEELE & SONS' Wrought Handle Sad Irons.
EXCELSIOR MILLS, Genuine Turkish Emery.
BROWN & BRO.'S Brass and Copper Wire, Rivets, Spoons, &c.
GAYLORD MANUFACTURING CO.'S Till, Chest and Cupboard Locks.
AMES' Genuine (A) Chester Emery.
COLWELL & COLLINS, NORWAY BOLT CO., Norway Carriage and Tire Bolts.
PLYMOUTH MILL CO.'S Black and Tinned Iron Rivets.
AMERICAN MACHINE CO.'S Fluters, &c.
STUART, PETERSON & CO.'S Tinned and Enameled Ware, &c.
HUSSEY, HOWE & CO.'S Bar & Sheet Cast Steel.

Also a large line of Heavy and Shelf Hardware.

PROVIDENCE TOOL CO.,

PROVIDENCE, R. I.

MACHINERY NUTS.

CHAMFERED, TRIMMED AND DRILLED.

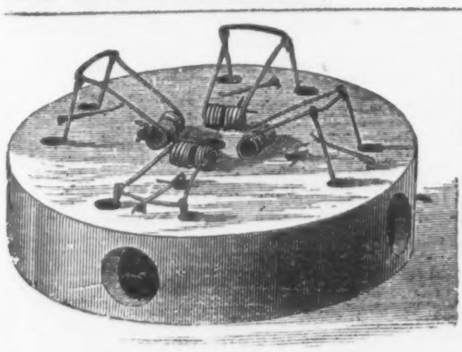
We wish to call attention to our Extra Trimmed Nuts for Machinery. They are especially adapted for all kinds of machine work where strength and neat finish are required, and are made so smooth as to require but very little labor for the most highly finished work. The holes are drilled, and always exactly in the center, thus obviating a trouble which is often experienced where milling is necessary, and enabling the machinist to produce a thread perfectly smooth and full, and with the greatest ease in tapping.

We usually keep in stock Nuts of the U. S. Government and other standard sizes, and can make to order any sizes which may be required.

We will gladly furnish a sample lot to show the quality, and quote prices on application.

HENRY B. NEWHALL,

105 Chambers Street, New York Agent.



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MOUSE TRAPS,

For Home and Export Trade.

BEST IN MARKET.

RIPLEY MFG. CO.

Unionville, Ct., U. S. A.,

Manufacturers of

Lemon Squeezers, Mallets, Rosewood Faucets, Patent Boot Jacks, and Housefurnishing Ware.

DAVID HYMES & CO.,

92 CHURCH STREET, NEW YORK,

MANUFACTURERS' AGENTS.

Bargains in Hardware & Cutlery.

Low estimates made on all kinds of **SMALL CASTINGS**, in the **Rough, Japanned** or **Varnished.**

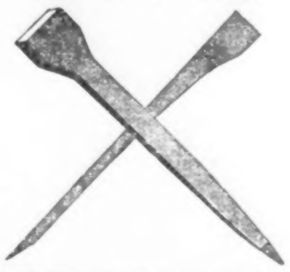
NATIONAL

Horse Nail Co.

MANUFACTURERS OF

FINISHED

[BRIGHT OR BLUED]



These nails are made of the best brands of **NORWAY IRON**, and are guaranteed to be equal to any in the market.

NATIONAL HORSE NAIL CO.,

VERGENNES, VT.

DURRIE & McCARTY, Agents,

No. 97 Chambers St., New York

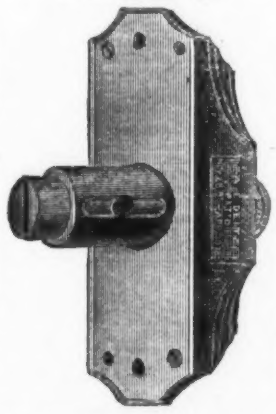
A. E. DEITZ,

(Successor to Barnes & Deitz.)

Manufacturer of

Store Door Locks, Night Latches, Padlocks, Drawer Locks, &c., with Flat Steel Keys.

EXTENSION TUBE



STORE DOOR LOCK, No. 184.

Durrie & McCarty, Agents,

97 Chambers & 81 Reade Sts., New York.

WALKER'S

Forged Horse Shoes,

SHOENBERGER'S

Patent Toe Calks,

Superior to any in market.

Send for prices and samples.

A. BUSSING, General Agent,

4 Warren St., New York.

Peckham's "NEW IDEA"

3 lb. Mica Package for 1880.

PRICE REDUCED.

Put up expressly for Retail Dealers who desire to buy small quantities and a variety of desirable and saleable sizes. Put up in a neat and attractive Show case.

TWELVE SIZES OF MICA,

Of the very best quality.

¼ lb.	3x6	¼ lb.	2½x4½	¼ lb.	4½x6
¼ lb.	4x5	¼ lb.	2¼x5½	½ lb.	3 x3
¼ lb.	4x7	½ lb.	3 x5	½ lb.	2¼x4
¼ lb.	2x3	½ lb.	5 x8	½ lb.	2½x3½

PRICE, $8.00. Net cash. No discount.

This Package sent FREE by express or mail to any part of the United States.

J. S. & M. PECKHAM, Utica, N. Y.,

Miners and Wholesale Dealers in North Carolina Mica.

RIEHLÉ BROS.

STANDARD

SCALES

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TESTING MACHINES

Took all the FIRST PREMIUMS at the Pennsylvania State Fair, 1880, over all Competition.

TINIUS OLSEN & CO.,

STANDARD SCALES

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Manufacturers of Olsen's Little Giant Testing Machine, and Improved Railroad, Wagon and Furnace Charging Scales.

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Octagon Tea Pots.

Rear of 407 Cherry St., Philadelphia, Pa.

Send for Price List.

Established in 1839. *Formerly L. & A. G. Coes.*

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Manufacturers of L. Coes'

GENUINE IMPROVED AND MECHANICS

Patent Screw Wrenches

UNDER PATENTS DATED

JUNE 26, 1866,
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REISSUED 1870.

NOVEMBER 10, 1863,
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REISSUED JUNE 1, 1868,
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The back thrust when in use borne by the SHANK instead of the Handle

None genuine unless stamped "L. COES & CO."

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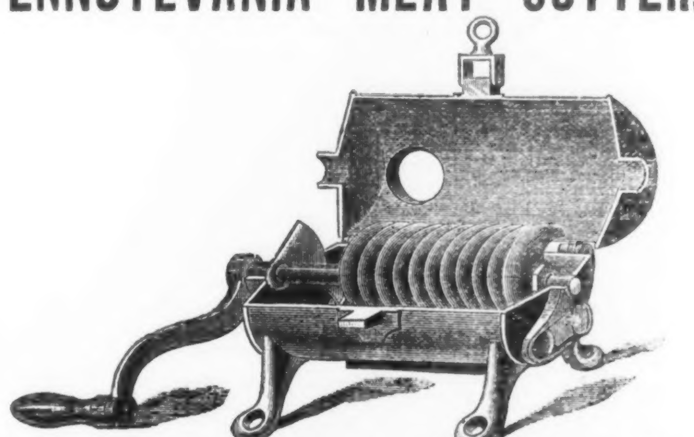
PENNSYLVANIA MEAT CUTTER.



THE ONLY ENAMELED MEAT CUTTER IN THE MARKET.

Now Ready for Fall Trade.

PRICE LIST.

No. 1, containing 8 Steel Knives, per dozen $24.00
No. 2, " 12 " " " " 28.00
No. 3, " 12 " " " " 36.00
No. 00, Enameled for Family Use, with Screw Clamp, to screw on table, per dozen 18.00

Discount to the trade, 50 per cent For sale by

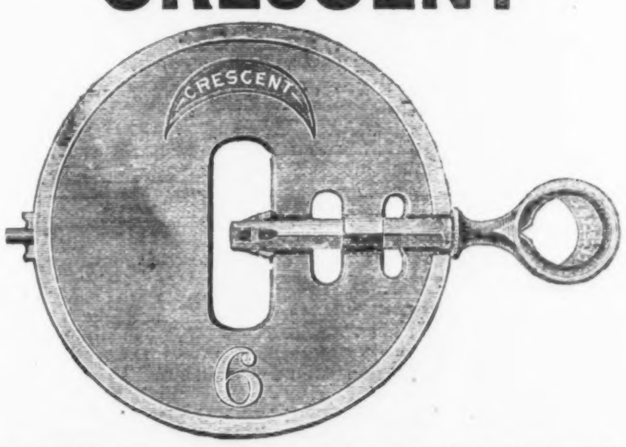
LLOYD, SUPPLEE & WALTON, Philadelphia.

DURRIE & McCARTY, New York.

ALSO,

PENNSYLVANIA LAWN MOWER, 1880.

"CRESCENT"



STOVE PIPE DAMPER.

PATENT APPLIED FOR.

THE BEST THING OF ITS KIND IN THE MARKET. CONSTRUCTED ON AN ENTIRELY NEW PRINCIPLE, EMBODYING SIMPLICITY, EFFICIENCY AND NEATNESS.

No Small Pieces to Lose, No Spring to get Out of Order, No Nut to Work off.

This Damper consists of but TWO pieces—the STEM and BLADE—the parts being so constructed that when the former is inserted (either side up) it engages within a notch near its end and a raised catch formed on the blade, which effectually prevents the stem from working out while in practical use, and at the same time admits of its withdrawal by the application of a little extra pressure outward. The Damper is held in any desired position by the pressure brought to bear on the pipe between the shoulder of the handle and the ends opposite and around the pivot formed on the blade.

Owing to its simple construction, no directions for attaching are necessary.

THE CLARK MFG. CO., Sole Manufacturers,

BUFFALO, N. Y.

STEPHENS' PAT. VISE

AND ATTACHMENTS,

Stationary and Swivel Bottoms.

Adapted to every variety of work, from jewelers to locomotive works. Opens FURTHER, holds FIRMER, is HEAVIER and MORE DURABLE than any other Vise. For sale by the Hardware trade.

STEPHENS PAT. VISE CO., No 41 Dey Street, New York.

PRENTISS PATENT VISES

ADJUSTABLE JAWS,

Stationary & Patent Swivel Bottoms

ADAPTED TO ALL KINDS OF VISE WORK.

HALL MFG. CO., 23 DEY ST., NEW YORK.

Send for Circular.

A List of Tin Plate Manufacturers, Together with some of the Makers' Brands.

The following list of tin plate manufacturers of England, Scotland and Wales, together with the names of some of the principal brands put forth by them, is published for the benefit of many of our readers who have asked for such a table. It is as complete as we have been able to make it, although it is possible there are some important omissions. We shall be glad to add to it and to make corrections whenever information is furnished us. We have no doubt that the table as it is it will prove of general interest, in view of what has preceded it on the subject of brands. Many familiar names will be noticed among the brands, some of them being in connection with other names which are scarcely known at all to the general trade on this side of the water.

NOTE.—In the list the word "Crown" indicates the device ♛ which appears in the brand as burned upon the boxes. The word "Diamond" is also substituted for the device usually employed to represent that article, and which is burned upon the boxes in branding.

Name of works.	Name of firm.	Where situate.	Brands. Coke.	Brands. Charcoal.
Aberdulais	Joshua Williams & Co.	Neath, Glamorganshire	Neath—AB	Dulais—Neath (Crown.)
Abergavenny	The Brynmawr Coal and Iron Co., Limited	Abergavenny, Monmouthshire		
Abertillery	Philip S. Phillips	Abertillery, Newport, Monmouthshire	EV—Cardiff—Crumlin	EV.
Amman	Amman Iron Co.	Brynamman, Swansea	Strick	Amman.
Avonvale	Port Talbot Tin Plate Co.	Aberavon, Taibach, Glamorganshire	Alcan	America—Avon Vale.
			Diamond	Taibach—DRD—Port.
Abercarne	Daniel Whitehouse	Newport, Mon	(Diamond)	Abercarn.
Beaufort	Beaufort Tin Plate Co.	Morriston, Swansea, Glamorganshire	LF—DD	Beaufort—BSC.
Bradley	Hatton, Sons & Co.	Bilston, Staffordshire	Bilston	Bradley—THH (Crown).
Broadwaters	Hatton, Sons & Co.	Kidderminster, Worcestershire		V (Crown) R.
Brockmoor	Budd & Co.	Brierley Hill, Staffordshire	BC—NIC	(BC)—(NIC).
Burrowes	Glamorgan Tin Plate Co.	Aberavon, Glamorganshire	Boston—Tonna	JLJ—Burrows.
Burry	Burry Tin Plate Co.	Llanelly, Carmarthenshire	Sartoris—Nellie	Dell—Stepney.
Carleon	F. Moggridge & Co.	Near Newport, Monmouthshire		Avon Lrvyd.
Carmarthen	Thomas Lester & Co.	Carmarthen, Carmarthenshire		Towy (Crown) — Carmarthen—Gwili (Crown)—Wales—Silurta
Cambria	Cambria Cptive. Scy., Ld.	Pontardulais	TJN—IOLO	CCS—Ifor.
Coatbridge	Coatbridge Tin Plate Co.	Coatbridge, Glasgow	Manx—B. & B.—Anchor	Glasgow—B (Crown).
Cookley	John Knight & Co.	Kidderminster, Worcestershire	Cookley CO.	Cookley K—Knight P.
Cwm Avon	The Copper Miners' Tin Plate Co.	Taibach, Glamorganshire	BI—Pelennal	CA—ECC—VS.
Cwmbwrla	Swansea Tin Plate Co.	Swansea, Glamorganshire	BV—Pentre	Gloster—JS Crown.
Cwmfelin	Cwmfelin Tin Plate Co.	Swansea, Glamorganshire	Cwmfelin—CF Abertawe—Howard	Millwood—Cwmfelin—Abertawe—Ava.
Dafen	Phillips, Nunes & Co.	Llanelly, Carmarthenshire	DP—SNC—Llan	Dafen—P. S. & Co. (Crown) Vole.
Derwent	W. Griffiths & Co.	Workington, Cumberland	Workington—Dunvant	Lonsdale—Penrith.
Dyffryn	Daniel Edwards & Co.	Morriston, Swansea, Glamorganshire	Deri (Crown)—Onen (Crown)	Iwen—DE (Crown).
Gadly's Uchaf	Hosgood & Smith	Aberdare, Glamorganshire	Cynon	
Garth	Garth Iron & Tin Plate Co.	Rhiwderin, Newport, Monmouthshire	Garth Coke	Garth Charcoal—Ruderin.
Gower	H. Ll. Morris & Co.	Penclawdd, Glamorganshire	Rose—Frood—Caswell	
Glamorgan	Webb, Shakespeare & Williams	Portardulais, Llanelly	Alpha—Rhine—P'dulais	Falcon—Seine.
Glentawe	Glentawe Tin Plate Co.	Pontardawe, near Swansea		
Gwendraeth	J. Chivers & Son	Kidwelly, Carmarthenshire		Glyn—Gwendraeth.
Hendy	Edmund Boughton & Co.	Pontardulais, Carmarthenshire	Rhos—EB & Co.	Hendy—Gower—Craig.
Hope	Hope Iron & Tin Plate Co.	Tipton, Staffordshire	Anchor Coke	H Anchor Co.—Walkers.
Horseley Fields	E. P. & W. Baldwin	Wolverhampton	Arley (Crown)—Stour	EP & WB WH—Wilden—Unicorn.
Landore	Landore Tin Plate Co.	Swansea, Glamorganshire	Best Landore—Derwent	Best Landore—STP/L (Crown).
Llanelly	John S. Tregoning & Son	Llanelly, Carmarthenshire	Bissoe	Tregoning Morfa—LPL—JST.
Llangennech	Llangennech Tin Plate Co.	Llangenneck, near Llannelly		Llangennech — St. George—Standard—Queen—Alfred.
Llantrissant	Llantrissant Tin Plate Co.	Llantrissant, Glamorganshire	Trissant—Hensol	Windsor (Crown)—Vaughan
Llwydarth	Llwdarth Tin Plate Co.	Maesteg, Bridgend, Glamorganshire	Medal—Cwm Du	Maestag—Arth
Lydbrook	Richard Thomas & Co.	Near Ross, Herefordshire	Madoc—Lydbrook	R. T. & Co. Dean—KYRL
Lydney	R. Thomas & Co.	Lydney, Glamorganshire	Awre	LB—Lydney—Allaways.
Machen	Machen Iron & Tin Plate Co.	Newport, Monmouthshire	2 MM	Machen
Mansel	Mansel Tin Plate Co.	Taibach, Glamorganshire		
Margam	Robert B. Byass & Co.	Aberavon, Glamorganshire		MF.
Marshfield	Marshfield Co., Limited	Llanelly, Carmarthen	Glanmor—Grafton	Marshfield—N. E. & Co.
Melin Griffith	T. W. Booker & Co., Ld.	Cardiff	RG—Pen	R. G.—Pen.
Melyn	Leach, Flower & Co.	Neath, Glamorganshire	Afan—Cymro	MELYN.
Mold	The Alyn Tin Plate Co.	Mold, Flintshire	Alyn—Mold—Flint	Alyn (Crown).
Monmouth Forges	H. T. Griffiths & Co.	Monmouth		Monnow.
Morlais	Morlais Tin Plate Co.	Llangennech, Llanelly	Ruthin Mersey	Cardigan—Bridgend
Morriston	Morriston Tin Plate Co.	Swansea, Glamorganshire	Tircanol Gelly	Calland—DG (Crown).
Old Castle	Old Castle Iron and Tin Plate Co., Limited	Llanelly, Carmarthenshire	Old Castle—OC	Stradey—Burry-Killey.
Osier Bed	Osier Bed Iron Co.	Wolverhampton	OB—HF (Crown) S.	Osier Bed—HF (Crown).
Parkend	Forest of Dean Iron Co.	Lydney, Gloucestershire		Parkend—Eagle.
Pontheer	Conway, Conway & Co.	Caerlean, Monmouthshire		PM—(Crown).
Pontardawe	W. Gilbertson & Co.	Swansea, Glamorganshire	Gilbertsons—Parson	Pont-ar-tawe—(Crown) AZ.
Pontardulais	Pontardulais Tin Plate Co.	Pontardulais, Glamorganshire	Menai—Goppa	Tarian—Gelert.
Pontnewydd	B. Conway & Co.	Newport, Monmouthshire	Torfaen	PN—Pontnewydd.
Pontrhydyrun	Conway Brothers	Newport, Monmouthshire	Ashford	Conway—PD (Crown).
Pontymister	Banks & Co.	Newport, Monmouthshire		Pontymister.
Pontypool	Pntypl Iron and Tin Plate Co.	Pontypool, Monmouthshire	Osborne—PPM	Pont Pool—Balmoral—OFPI.
Redbrook	Redbrook Tin Plate Co.	Monmouth, Monmouthshire	Redbrook	LRB.
South Wales	E. Morewood & Co.	Llanelly, Carmarthenshire	Park—M & J—Sedan	Grange—Llanon—PTL—SS.
Star	Star Iron and Tin Plate Co.	Ryder's Green, West Bromwich	GG	Dragon—D (Crown) H.
Stour Vale	Crowther Bros. & Morgan	Kidderminster, Worcestershire	Lion and (Crown)	Lion and (Crown).
Tividale	Budd & Co.	Tipton, Staffordshire	BC—NIC	(BC)—(NIC).
Treforest	Treforest Tin Plate Co.	Pontypridd, Glamorganshire	Taff—F—Arrow—Llantwit	FC—(Crown) Treforest LME.
Tydee & Rogerston	John Lewis & Co.	Newport, Monmouthshire	TD—Bangor	TD—Tower Eaton—EBBW.
Tynewydd	Tynewydd Iron and Tin Plate Co.	Pontnewydd, Monmouthshire	Usk—Ohio—Oakfield	RP—TN (Crown).
Upper Forest	Llansamlet Tin Plate Co.	Swansea, Glamorganshire	JB—UF—B—BB	WH—HB.
Vernon	David Morris & Co.	Briton Ferry, Glamorganshire	Jersey—Ferry—HG	Vernon—Baglan (Crown).
Wilden	E. & W. Baldwin	Stourport	Arley (Crown)—Stour	EP & WB—WH—Wilden Unicorn.
Worcester	Llansamlet Tin Plate Co.	Middle Forest, Swansea, Glamorganshire	Velindre—Glantawe Gwilwym	Vendrod—Dynevor—Worcester.
Ynispenllwych	Tawe Tin Plate Co., Limited	Swansea, Glamorganshire	Glais—S. & Co.—HS	Thor—Ynis—Tawe Llewellyn.
Yspitty	J. Rushton Turnock	Loughor, R. S. O., South Wales	Yspitty—Hawk	
Ystalyfera	Ystalyfera Iron Co.	Swansea, Glamorganshire		

The Basic Process and Its Critics.

The letter by Mr. Hampton, a Sheffield steel maker, referred to in the letter of our English correspondent published in last week's issue of *The Iron Age*, has brought out a voluminous correspondence which is of interest in more than one respect. One letter comes from M. Pourcel, the well-known metallurgist of the Terrenoire Works. It commands attention, as it contains some statements of facts which will be received with considerable interest. We give it below:

"Like Mr. Hampton, I believe that the first result of the process, and the only practical one which has been obtained at the works which use it, is largely to substitute ingot iron (*fer fondu*) for puddled iron.

"Dr. Von Tunner, of Leoben, Austria, is also of this opinion, with this reservation, that, according to him, they will obtain more surely a superior ingot iron by treating in the basic converter a pig iron of good quality, without sulphur, and with little phosphorus; while the common pigs, with 1.5 of phosphorus, 0.20 to 0.25 of sulphur and 1.0 to 1.50 of manganese, will serve to produce ingot iron as a substitute for ordinary puddled iron. This opinion is not that of the Germans, and above all that of M. Massenez, of Hoerde. In fact, in the paper which M. Massenez read at the Düsseldorf meeting are found no examples but such as are favorable to the process. The analyses of the products obtained in the basic converter at Hoerde mentioned insignificant quantities of phosphorus, 0.02 to 0.03 per cent., and this is speaking of inferior pigs containing only 0.40 to 0.50 of manganese, 1.35 of phosphorus (about) and 1.29 sulphur. But are these truly the results of every day's working? Why I put this question is because the operations of the basic converter, carried out before the members of the Iron and Steel Institute at Hoerde, are notably different from those of which M. Massenez speaks in his paper.

"As a member of the Iron and Steel Institute, I have been enabled to assist at this operation at Hoerde, and to follow it in all its details, and to take samples of metal with the permission of Messrs. Massenez and Pink, whose perfect courtesy one cannot too highly acknowledge for the manner in which they have done the honors of their splendid works.

"I give here the results of my analysis (operation of August 27, 3.30 p. m.). The pig placed in the closed converter contained phosphorus, 1.453; manganese, 1.332; sulphur, 0.285. The sample which was taken at the moment of the disappearance of the carbon lines, after 16′ 30″ of blowing, contained phosphorus, 1.450; manganese, 0.280; sulphur, 0.107. The second sample taken, after 2′ 50″ of the additional blow, had phosphorus 0.169. The third sample, taken after the addition of the spiegel, and after 3′ 10″ blow, contained no more than manganese 0.160 and phosphorus 0.098. Before adding the spiegel the slag was run out of the converter as completely as possible to avoid the inconvenience of the remixing of the metal with the phosphorus which it contains in the form of phosphate of iron.

"In spite of this precaution the amount of phosphorus increased in the liquid metal, giving the following analysis: Phosphorus, 0.137; manganese, 0.560; carbon, 0.295; sulphur, 0.065.

"Can it be admitted that in current operations they obtain a metal purer and superior to this? It is very improbable.

"Phosphorus is acceptable in metal for rails, but if the proportion of carbon cannot be increased beyond 0.30, Mr. Hampton is right in saying that the railway companies who have rejected puddled iron rails have not a great advantage in adopting ingot iron rails obtained by the basic process. Nevertheless, he opinion which M. Massenez expressed in his paper is that the basic process can give metal as carburized as can be desired. But M. Massenez forgets to say how they can obtain this result.

"The means would be, no doubt, to add more spiegel at the end of the operation, but the inconvenience of this mode of working is the re-entry into the metal of a greater quantity of phosphorus. This is my opinion after having seen in operation the Thomas process at Eston. It is shared in at the present time by all the 'practitioners,' and Mr. Pink has repeated the same to me. 'The more spiegel is added, the more phosphorus re-enters into the metal.' They ought, then, to drive the blast as hard as possible, in order to dephosphorize the metal at its last stage, and to run as completely as possible the slag from the converter, in order to diminish the chances of rephosphorization. But the proportion of peroxide of iron dissolved in the metal will be greater in increasing the intensity of the blast, and, consequently, the reaction, when the spiegel is added, will be quicker; that is to say, that a greater quantity of the carbon of the spiegel will be burnt, while that which will incorporate itself with the steel will not be greater than in the ordinary case. It is a delicate point, worthy to be pointed out, what is practically the proportion of spiegel which should be added to produce metal with 0.5 of carbon, and with a minimum of phosphorus. Could not the difficulty be solved by treating a phosphoric pig, rich in manganese, containing, say, more than 2 per cent., perhaps 3 per cent., with a minimum of silicon? In fact, experience has proved that the manganese in the pig containing little silicon remains in a notable proportion in the metal until the disappearance of the carbon lines, and that during the blast it oxidizes less quickly than phosphorus. Consequently, the more manganese the pig contains, the greater, no doubt, will be the proportion which will remain to be oxidized during the period of blowing.

"But while the oxygen of the air during the blow will act on the phosphorus first and then on the manganese, the iron will be preserved, and less oxide of iron will be dissolved in the metallic bath. By this means the reaction occasioned by the addition of the spiegel will be less rapid, there will be a much smaller part of its carbon burnt, and therefore a greater quantity incorporated with the metal.

"This solution of the method of producing hard metal suitable for the manufacture of steel rails is of a nature to 'tranquillize' the manufacturers of hematite pig, for one cannot realize the hypothesis of Mr. Lowthian Bell, that phosphoric pig, with 2 to 3 per cent. of Mn can be produced at 20/ below the price of hematite pig."

Herr Pink, of the Hoerde Works, writes as follows:

"Mr. Hampton states that he saw the dephosphorizing process in Germany, and came to the conclusion that excellent malleable iron can be obtained thereby suitable for shipbuilding purposes, &c., and that it appears as if puddled iron were doomed, thus corroborating the opinion I expressed in my paper read before the Iron and Steel Institute in May last. Soft steel or ingot iron can be most easily and certainly obtained wholly free from red-shortness, of from 24 to 27 tons tensile strength per square inch, showing an elongation of from 20 to 27 per cent. in a length of 10 inches, with a contraction of area at point of breakage of from 50 to 70 per cent. The ductility of this class of material is perfectly marvelous, and for the purposes mentioned by Mr. Hampton, of the very greatest import.

"So far I quite agree with the observations of Mr. Hampton, but his statement that the dephosphorized material is not suitable for the harder qualities is surprising, more especially as he mentions these harder qualities in conjunction with the 'interests of the railway companies.'

"When Mr. Hampton visited the works at Hoerde the quality he then saw produced was

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Graham & Haines, 113 Chambers, N. Y. ... 8
Heaton & Denckla, 507 Commerce, Phila. ... 11
Hymes David & Co., 92 Church, N. Y. ... 11
Hardware Dealers.
Lloyd, Supplee & Walton, 625 Market, Phila. ... 11
Shepard Sidney & Co., Buffalo N. Y. ... 21
Hardware Importers.
Boker Hermann & Co., 101 Duane, N. Y. ... 28
McCoy & Co., 134 and 136 Duane, N. Y. ... 8
Hardware Manufacturers.
Coulter, Flagler & Co., 87 Chambers, N. Y. ... 11
Cowles Hardware Co., Unionville, Conn. ... 33
Enterprise Mfg. Co., Phila. ... 27
Globe Mfg. Co., Middletown, Conn. ... 27
Lloyd, Supplee & Walton, 625 Market st., Phila., Pa. ... 11
Miller's Falls Co., 74 Chambers, N. Y. ... 21
Perin & Gaff Mfg. Co., Cincinnati, O. ... 21
Shepard Hardware Co., Buffalo, N. Y. ...
Stanley Works, New Britain, Conn. ... 2
Tiebout W. & J., 31 Chambers, N. Y. ... 24
Trenton Lock & Hardware Co., Trenton, N. J. ... 27
Union Mfg. Co., 99 Chambers, N. Y. ... 12
Van Wagoner & Williams, 82 Beekman, N. Y. ... 38
White Thos. C. & Co., Cincinnati, O. ... 25
Hardware Specialties.
Cleveland Wrought Iron Fence Works, Cleveland, O. ... 3
Comly James, Philadelphia, Pa. ...
Metal Strip Co., Fremont, O. ...
Philadelphia Novelty Mfg. Co., Philadelphia, Pa. ... 25
Security Blind Fast Co., Providence, R. I. ... 11
Shepard Sidney & Co., Buffalo, N. Y. ...
Spencer & Underhill, 94 Chambers, N. Y. ...
Sprague Novelty Works, Rochester, N. Y. ... 24
Harness Snaps.
Covert Mfg. Co. West Troy, N. Y. ... 11
Harrows.
Bunger, M. E. & Co., Indianapolis, Ind. ... 10
Hay Knives.
Holt Hiram & Co., East Wilton, Me. ...
Hektograph.
Hektograph Co., 22 Church N. Y. ... 11
Hinges.
Cowles Hdw. Co., Unionville, Ct. ... 33
Scovill Mfg. Co., 419 Broome, N. Y. ... 2
Stanley Works, New Britain Conn. ... 2
Hog Ringers.
Chambers, Bering & Quinlan, Decatur, Ill. ... 29
Hoisting Engines, *Makers of.*
Crane Bros. Mfg. Co., Chicago, Ill. ... 36
The Norwalk Iron Works Co., S. Norwalk, Conn. ... 35
Hoisting Machines.
Box Alfred & Co., 312 Green, Phila. ... 37
Cincinnati Chain Hoist Co., Cincinnati, O. ...
Harrington Edwin & Son, Philadelphia, Pa. ... 36
Sellers Wm. & Co., Phila. and 79 Liberty st., N. Y. ... 37
Stokes & Parrish, Philada., Pa. ... 36
Hooks (Cotton & Bale.)
New York Handle & Mallet Works, 456 E. Houston ... 13
Hooks, Wardrobe.
Cary S. C., 239 Mercer, N. Y. ...
Horse Clippers.
Boker Hermann & Co., 101 & 103 Duane, N. Y. ... 28
Shannon J. J., Philadelphia, Pa. ...
Horse Nails, *Makers of.*
Ausable Horse Nail Co., 4 Warren, N. Y. ... 5
Bridgewater Iron Co., Bridgewater, Mass. ...
FP Nail Co., Cleveland, O. ... 28
National Horse Nail Co., Vergennes, Vt. ...
Putnam Nail Co., Boston ...
Saranac Horse Nail Co., Plattsburg, N. Y. ...
Horse Shoes, *Makers of.*
Bradlee & Co., Philadelphia, Pa. ... 5
Burden Iron Works, Troy, N. Y. ... 4
Bussing A., 4 Warren, N. Y. ... 5
Rhode Island Horse Shoe Co., Providence, R. I. ...
Schoenberger & Co., Pittsburgh, Pa. ... 4
Hot Blast Stoves.
Withrow & Gordon, Pittsburgh, Pa. ...
Housefurnishing Goods.
Enterprise Mfg. Co., Geneva, O. ...
Hydrants, &c.
McLean John, 300 Monroe, N. Y. ...
Mohawk & Hudson Mfg. Co., Waterford, N. Y. ... 6
Hydraulic Jacks.
Dudgeon Richard, 24 Columbia, N. Y. ... 9
Ice Cream Freezers.
White Mountain Freezer Co., Laconia, N. H. ...
Insurance, Boiler.
Hartford Steam Boiler Inspection & Insurance Co. ... 37
Iron Brokers.
Boynton Geo. A., 70 Wall, N. Y. ... 4
Etting Edward J., Philadelphia, Pa. ... 5
Gallaudet P. W., 3 & 5 Wall, N. Y. ... 4
Haigh A. C., Pittsburgh, Pa. ...
Iron, Charcoal, *Warm or Cold Blast.*
Logan Iron & Steel Co., Philadelphia ... 5
Lundell, Chas. G. (Swedish), Boston, Mass. ... 4
Quincy John W., 98 William, N. Y. ... 4
Iron Commission Merchants.
Bailey J. F. & Co., 52 Wall, N. Y. ... 4
Heberton & Co., Philadelphia, Pa. ... 5
Lundell, Chas. G., Boston, Mass. ... 4
Mohr J. J., 430 Walnut, Philadelphia ... 5
Richardson J. O., 252 Dock, Philadelphia ... 5
Wister L. & R., 223 Walnut, Phila. ... 5
Iron, Pig, *Importers of.*
Clark E. W. & Co., Philadelphia, Pa. ... 5
Lee James & Co., 72 Pine, N. Y. ... 4
Lundell, Chas. G. (Swedish), Boston, Mass. ... 4
Wheeler E. S. & Co., 51 Cliff, N. Y. ... 4
Williamson James & Co., 69 Wall, N. Y. ... 4
Iron Dealers.
Abeel Brothers, 190 South, N. Y. ... 4
Adams Hugh W., 78 Pine, N. Y. ... 4
Bonnell, Botsford & Co., Youngstown, O. ... 6
Borden & Lovell, 70 and 71 West, N. Y. ... 4
Carmichael & Emmens, 130 and 132 Cedar, N. Y. ... 4
Cooney Daniel F., 88 Washington, N. Y. ... 4
Egleston Bros & Co., 160 South, N. Y. ... 4
Harrison & Gilloon, 558 to 561 Water, N. Y. ... 4
Hoffman J. W. & Co., 208 S. Fourth, Philadelphia ... 5
Judson B. F., 457 and 459 Water, N. Y. ... 4
Kane C., Pittsburgh, Pa. ... 4
Lundberg Gustaf, 38 Kilby, Boston, Mass. ... 4
Lundell Chas. G. (Swedish), Boston, Mass. ... 4
Middleton W. S., 52 John, N. Y. ... 4
Naylor & Co., 99 John, N. Y. ... 30
Ogden & Wallace, 85, 87, 89 and 91 Elm, N. Y. ... 4
Pierson & Co., 24 Broadway, N. Y. ... 4
Pullman J. Wesley, Philadelphia, Pa. ... 5
Quincy John W., 98 William, N. Y. ... 4
Richards D. W. & Co., 92 Mangin, N. Y. ... 4
Swan John E. & Bros., Glasgow & Middlesbrough ... 6
Wallace Wm. H. & Co., Albany and Washington streets, N. Y. ... 4
Warner A. B. & Son, 28 and 29 West, N. Y. ... 4
Williamson James & Co., 69 Wall, N. Y. ... 4
Wilson, R. A. & Co., Pittsburgh Pa. ... 4
Whitney A. R., 58 Hudson, N. Y. ... 4
Iron. *(Manufacturers' Agents.)*
Cox, Jr., Justice & Co., 333 Walnut, Phila. ... 5
Hoffman J. W. & Co., 208 S. 4th, Phila. ... 5
Levis Henry & Co., Philadelphia, Pa. ... 5
Lundell Chas. G. (Swedish), Boston, Mass. ... 4
Iron. *Manufacturers of.*
Albany & Rensselaer Iron & Steel Co., Troy, N. Y. ... 30
Allentown Rolling Mill Co., Allentown, Pa. ... 5
Britton Iron and Steel Co., Cleveland, Ohio ... 6
Burden Iron Works, Troy, N. Y. ... 4
Coleman Rolling Mill Co., Louisville, Ky. ... 31
Kirkpatrick & Co., Pittsburgh Pa. ... 4
Kloman Andrew, Pittsburgh, Pa. ... 4
Lang W. Bailey, 50 Beekman, N. Y. ... 4
Logan Iron & Steel Co., Philadelphia, Pa. ... 5
North Chicago Rolling Mill Co., Chicago, Ill. ... 30
Phœnix Iron Co., 410 Walnut, Philadelphia ... 4
Portsmouth Iron and Steel Co., Portsmouth Ohio ... 6
Roane Iron Co., Chattanooga, Tenn. ... 6
Rome Merchant Iron Mills, Rome, N. Y. ... 5
Rowland James & Co., 920 N. Delaware ave., Phila. ... 38
Rowland Wm. & Harvey, Philadelphia ... 4
Shoenberger & Co., Pittsburgh, Pa. ... 6
Taylor & Boggis, Cleveland, O. ... 4
The Passaic Rolling Mill Co., Paterson, N. J. ... 4
Ulster Iron Works, 18 Wall, N. Y. ... 4
Williams, Long & McDowell, Pittsburgh, Pa. ... 4
Wood Alan & Co., 519 Arch, Philadelphia ... 5
Zug & Co. Pittsburgh, Pa. ... 4
Iron, Sheet, *Manufacturers of.*
Wood W. D. & Co. Pittsburgh, Pa. ... 4
Iron Stable Fixtures.
Howard & Morse, 45 Fulton, N. Y. ... 2
Lanterns. *Manufacturers of.*
Dietz R. E., 54 and 56 Fulton, N. Y. ... 38
Howard & Morse, 45 Fulton, N. Y. ... 2
Miller Edw'd & Co., 35 Warren, N. Y. ... 25
Lathe Dogs.
Coles H. H. & Co., Philadelphia, Pa. ... 37
Lawn Mowers.
Lloyd, Supplee & Walton, Philadelphia ... 21
Levels.
Disston Henry & Sons, Philadelphia ... 22
Jennings C. E., 96 Chambers, N. Y. ... 27
Locks and Knobs.—*Manufacturers of.*
Bohannan Wilson, Broadway and Kossuth, Brooklyn, E. D. ... 7
Branford Lock Works, Branford, Conn. ... 20
Coulter, Flagler & Co., 87 Chambers, N. Y. ... 11
D. K. Miller Lock Co., Philadelphia, Pa. ... 29
Durrie & McCarty, 97 Chambers, N. Y. ... 21
Hillebrand & Wolf, 110 S. 8th, Philadelphia ... 25
Romer & Co., Newark, N. J. ... 24
Smith & Egge Mfg. Co., Bridgeport, Conn. ... 25
Yale Lock Mfg. Co., 53 Chambers, N. Y. ... 3
Lubricator.
American Lubricator Co., Detroit, Mich. ... 35
Machinery, *Makers of.*
Akron Iron Co., Akron, O. ... 22
Bliss & Williams 167 Plymouth, Brooklyn ... 36
Box Alfred & Co., 312 Green, Phila. ... 37
Cooke Wm., 6 Cortland, N. Y. ... 37
Forsaith S. C. & Co., Manchester, N. H. ... 36
Garvin E. E. & Co. 139 Center, N. Y. ... 37
Johnson, Israel H. Jr., Philadelphia, Pa. ... 34
Landis Ezra F., Lancaster, Pa. ... 35
L. B. Flanders Machine Works, Philadelphia, Pa. ... 29
Lyon E. & Co., 470 Grand, N. Y. ... 36
Mohawk & Hudson Mfg. Co., Waterford, N. Y. ... 36
Ofam & Atherton, Cleveland, O. ... 36
Pittsburgh Mfg. Co., Pittsburgh, Pa. ... 36
Sellers Wm. & Co., Phila. and 79 Liberty st., N. Y. ... 37
Stokes & Parrish, Philada., Pa. ... 36
The Stiles & Parker Press Co., Middletown, Ct. ... 28
Wetherill Robert & Co., Chester, Pa. ... 37
Machinery (Barnes's Foot Power.)
Little Chas. E., 50 Fulton, N. Y. ... 10
Machine Screws. *Makers of.*
Fellows John, Williamsburg, N. Y. ... 36
Waterbury Mfg. Co., Waterbury, Conn. ... 2
Machinists' Tools.
Blaisdell P. & Co., Worcester, Mass. ... 35
Bullard E. P., 14 Dey, N. Y. ... 16
Cooke Wm., 6 Cortland N. Y. ... 37
Geo. Place Machinery Agency, 121 Chambers, N. Y. ... 16
Harrington E. & Son, 15th st. and Pennsylvania ave., Philadelphia, Pa. ... 27
J. Gray Machinery Depot, 37 Dey, N. Y. ... 16
King J. M. & Co., Waterford, N. Y. ... 6
Marcellus C. N. & Co., 91 Liberty, N. Y. ...
Sellers Wm. & Co., Phila. and 79 Liberty st., N. Y. ... 37
Stockwell Screw Machine Co., Cleveland, Ohio ... 36
Mallets.
N. Y. Handle and Mallet Works, 456 E. Houston ... 13
Penfield Block Works, Lockport, N. Y. ... 28
Measuring Tapes.
Eddy Geo. M. & Co., 353 Classon Ave., Brooklyn, N. Y. ... 10
Meat Cutters.
Kimball Shovel Co., Baltimore, Md. ... 29
Murray Iron Works, Burlington, Iowa ... 10
Metals.
Dickerson, Van Dusen & Co., 29 and 31 Cliff, N. Y. ... 2
Goldsmith Moses & Son, Charleston, S. C. ... 3
Naylor & Co., 99 John, N. Y. ... 30
Northrop A. C., Waterbury, Conn. ... 2
Phelps, Dodge & Co., Cliff, bet. John & Fulton, N. Y. ... 2
Phosphor Bronze Smelting Co., Limited, 2038 Washington av., Phila. ... 33
Purves A. & Son, cor. South and Penn, Phila. ... 5
Quincy J. W., 98 William, N. Y. ... 6
Read D. W. R. & Co., 205½ Walnut, Phila. ... 5
Schoenberg Metal Mfg. Co., 528 & 530 E. 20th, N. Y. ... 3
Starr John, Halifax, Nova Scotia ... 7
Metallurgists.
Booth, Garrett & Blair, 919 Chant, Philadelphia ... 5
Britton J. Blodgett, 330 Walnut, Philadelphia ... 24
Mica.
Peckham J. S. & M., Utica, N. Y. ... 21
Mine Lamps.
Leonard Bros., Scranton, Pa. ... 25
Miners' Candles. *Makers of.*
James Boyd's Sons, 10 and 12 Franklin, N. Y. ... 28
Mineral Paint.
Lowe S. B., Chattanooga, Tenn. ... 6
Mineral Wool.
Elbers Alexander D., 26½ Broadway, N. Y. ... 27
Molding Sand.
Whitehead Bros., 517 W. 15th, N. Y. ... 3
Mouse Traps.
Dietz R. E., 54 and 56 Fulton, N. Y. ... 38
Jones Claudius & Co., Erie, Pa. ... 22
Ripley Mfg. Co., Unionville, Conn. ... 21
Nails.
Fuller Bros. & Co., 139 Greenwich, N. Y. ... 4
Oxford Iron Co., 81 Washington, N. Y. ... 4
Rowland Jas. & Co., 920 N. Delaware, Ave., Phila. ... 5
Schoenberger & Co., Pittsburgh, Pa. ... 4
Zug & Co., Pittsburgh, Pa. ... 4
Nail Machinery.
Pittsburgh Mfg. Co., Pittsburgh, Pa. ... 31
Nickel Platers' Supplies.
Condit, Hanson & Van Winkle, Newark, N. J. ... 29
Wharton Joseph, Philadelphia, Pa. ... 29
Zucker & Levett, 540 to 544 West 16th st., N. Y. ... 23
Norway Shapes, *Rollers of.*
Naylor & Co., 99 John, N. Y. ... 30
Rowland Wm. & Harvey, Frankford, Philadelphia ... 38
Nuts, Bolts, etc., *Makers of.*
Allentown Rolling Mill Co., Allentown, Pa. ... 5
Haskell W. H. & Co., Pawtucket, R. I. ... 35
Russell, Burdsall & Ward, Port Chester, N. Y. ... 38
Standard Nut Co., Pittsburgh, Pa. ... 35
Sternbergh J. H., Reading, Pa. ... 38
Oil, Lubricating.
Meriam & Morgan Paraffine Co., Cleveland, O. ... 30
Oil, Plumbago.
Plumbago Oil Co., Rochester, N. Y. ... 33
Oil Stones.
Boyd & Chase, 107th and Harlem River, N. Y. ... 30
Ores.
Jackson Iron Co., Cleveland, O. ... 6
Llera J., 77 William, N. Y. ... 6
Pullman J. Wesley, 407 Walnut Philadelphia ... 5
Read D. W. R. & Co., 205½ Walnut, Philadelphia ... 5
Ox Shoes.
Greenfield Tool Co., Greenfield, Mass. ... 28
Packing.
Akron Rubber Co., Akron, O. ... 13
Katzenstein L. & Co., 35 Desbrosses, N. Y. ... 37
Patent Solicitors.
Howson & Son, Phila. and Washington, D. C. ... 25
Stetson Thomas D., 23 Murray, N. Y. ... 25
Tracy, Dyer & Wilber, Cleveland, O. ... 29
Pens, Steel.
Esterbrook Steel Pen Co., New York ... 13
Phosphor Bronze.
Kaufman A., 36 Park Place, N. Y. ... 25
Phosphor Bronze Smelting Co., Limited, 2038 Washington ave., Philadelphia ... 7
Picks, *Makers of.*
Pierson & Co., 24 Broadway, N. Y. ... 4
Pipes, Fittings, etc., *Makers of.*
McNab & Harlin Mfg. Co., 56 John, N. Y. ... 35
Pancoast & Maule, 227 Pear Philadelphia ... 34
Pipe, Water and Gas, *Makers of.*
McNeal A. H. & Bro., Burlington, N. J. ... 6
Mellert Foundry and Machine Co., Limited, Reading, Pa. ... 34
Reading Iron Works, Philadelphia, Pa. ... 5
Wood R. D. & Co., 400 Chestnut, Philadelphia ... 13
Plane Irons, *Manufacturers of.*
Buck Bros., Millbury, Mass. ... 10
Greenfield Tool Co., Greenfield, Mass. ... 28
Planes. *Manufacturers of.*
Greenfield Tool Co., Greenfield, Mass. ... 28
Laflin Mfg. Co., Westfield, Mass. ... 29
Stanley Rule and Level Co., 29 Chambers, N. Y. ... 3
Plated Ware.
Hall, Elton & Co., 75 Chambers, N. Y. ... 11
The Wm. Rogers Mfg. Co., Hartford, Ct. ... 11
Plumbers' Materials. *Manufacturers of.*
Carr Wm. S. & Co., 106 Center, N. Y. ... 25
Everhart Jas. M., Scranton Pa. ... 38
Pocket Knives.
Boker Hermann & Co., 101 Duane, N. Y. ... 28
Pots and Kettles, Tea and Coffee.
Ideal Coffee Pot Co., Philadelphia, Pa. ... 33
Purvis R. C., Philadelphia ... 21
Power Hammers.
Dienelt, Eisenhardt & Co., Philada., Pa. ... 36
Presses, Fruit and Vegetable.
Mohawk & Hudson Mfg. Co., Waterford, N. Y. ... 6
Presses, Power. *Makers of.*
Bliss & Williams, 167 Plymouth, Brooklyn ... 36
Merriman A. H., West Meriden, Conn. ... 36
Peerless Punch & Shear Co., 52 Dey, N. Y. ... 37
The Stiles & Parker Press Co., Middletown, Ct. ... 38
Pulleys.
Oesterline W., Cincinnati, O. ...
Penfield Block Works, Lockport, N. Y. ... 28
Providence Tool Co., Providence, R. I. ... 21
Pumps. *Makers of.*
Douglas W. & B., Middletown, Conn. ... 7
Gunnison A. B., Erie, Penn. ... 25
Hartford Compressed Air Pump Co., Hartford, Conn. ... 34
Pulsometer Steam Pump Co., 83 John, N. Y. ... 34
Rumsey & Co., Seneca Falls, N. Y. ... 7
Rumsey L. M. & Co., St. Louis, Mo. ... 34
Union Mfg. Co., 96 Chambers, N. Y. ... 12
Rails, Iron and Steel. *Makers of.*
Allentown Rolling Mill Co., Allentown, Pa. ... 5
Bates & Despard, 117 Pearl, N. Y. ... 4
Cambria Iron Co., Johnstown, Pa. ... 5
Cleveland Rolling Mill Co., Cleveland, Ohio ... 30
Montour Iron & Steel Co., Danville, Pa. ... 3
The Edgar Thomson Steel Co., 57 Broadway, N. Y. ... 31
Razors.
Tower L. C., Rochester, N. Y. ... 11
J. R. Torrey Razor Co., Worcester, Mass. ... 24
Rivets.
Falls Rivet Co., Cuyahoga Falls, Ohio ... 24
Gilmor Wm., of Wm., Baltimore, Md. ... 38
Grundy Geo. C., 165 Greenwich, N. Y. ... 24
Hoopes & Townsend, Philadelphia, Pa. ... 35
Townsend W. P. & Co. Pittsburgh, Pa. ... 35
Rock Breakers.
Blake Crusher Co., New Haven, Conn. ... 34
Farrel Foundry and Machine Co., Ansonia, Conn. ... 34
Gates & Scoville Iron Works, Chicago, Ill. ... 38
Rolls (Chilled).
Garrison A. & Co., Pittsburgh, Pa. ... 6
Roofing.
New T., 39 John, N. Y. ... 24
Rules, *Manufacturers of*
Stanley Rule and Level Co., 29 Chambers, N. Y. ... 3
Sad Irons.
Chalfant Mfg. Co., 435 Arch, Philadelphia ... 29
Enterprise Mfg. Co., Philadelphia ... 27
Sand and Emery Paper, *Makers of.*
Baeder, Adamson & Co., 730 Market, Philadelphia ...
Sand Sifter.
Riehlé Bros., Philadelphia, Pa. ... 21&30
Saws, *Makers of.*
Boynton E. M., 80 Beekman, N. Y. ... 38
Disston Henry & Sons, Phila. ... 32
Gerlach Peter & Co., Cleveland, Ohio ...
Wheeler, Madden & Clemsen Mfg. Co., Middletown, N. Y. ... 34
Scales, *Manufacturers of.*
Buffalo Scale Co., Buffalo, N. Y. ... 13
Charillon John & Sons, 91 Cliff, N. Y. ... 9
Olsen Tinius & Co., Philadelphia ... 21
Riehle Bros., 9th above Master, Phila. ... 21&30
Weeks & Ray, Buffalo, N. Y. ... 24
Screws. *Makers of.*
Billerbeck J., 17th and Venango Sts., Philadelphia ... 33
Miles F. S., 205 Quarry, Phila. ... 13
Philadelphia Screw Co., Philadelphia, Pa. ... 24
Screw Cutting Machinery.
Wiley & Russell Mfg. Co., Greenfield, Mass. ... 34
Screw Drivers. *(Improved) Makers of*
Disston Henry & Sons Phila. ... 32
Scythes.
Beardsley Scythe Co., West Winsted, Conn. ... 29
Scythe Stones.
Pike A. F., Pike Station, N. H. ... 11
Shafting. *Makers of.*
Sellers Wm. & Co., Phila. and 79 Liberty st., N. Y. ... 37
Shears.
Renz Hardware Co., Bridgeport, Conn. ... 10
Shears, Iron.
Hull J. E., Cincinnati, O. ... 35
Shears (Sheep).
Field Alfred & Co., 93 Chambers, N. Y. ... 10
Hildick A. H., 12 Warren, N. Y. ... 10
Shot, &c.
Sparks Thos. W., 121 Walnut, Philadelphia ... 25
Shovels, Spades and Scoops.
Griffiths Geo., Philada., Pa. ...
Kimball Shovel Co., Baltimore, Md. ... 29
Shutters, Steel and Wood.
Clark & Co., 162 W. 27th, N. Y. ... 25
Sifters.
Hunter J. M. & Co., Cincinnati, O. ...
Skates.
Union Hardware Co., 87 Chambers, N. Y. ... 32
Sleds.
Crosby, Sahler & Co., Rondout, N. Y. ... 13
Smelting Works.
Philadelphia Smelting Co., 12th and Noble sts., Philadelphia ... 31
Reeves Paul S., 760 South Broad, Phila. ... 38
Snaths.
Vermont Snath Co., Springfield, Vt. ... 11
Speaking Tubes.
Ostrander W. R., 19 Ann N. Y. ... 11
Spelter.
Manning & Squier, 113 Liberty, N. Y. ... 2
Osgood F. & Co., Bergen Port, N. J. ... 24
Spiegeleisen.
Wright Peter & Sons, 52 Broadway, N. Y. ... 5
Spoons.
Holmes, Booth & Haydens, 49 Chambers, N. Y. ... 2&11
The Wm. Rogers Mfg. Co. Hartford, Ct. ... 11
Springs.
Cary & Moen, 234 W. 29th, N. Y. ... 3
Gautier Steel Co., Ld., Johnstown, Pa. ... 3&30
Rowland Wm. & Harvey, Frankford, Phila. ... 38
Semple & Birge Mfg. Co., St. Louis, Mo. ... 24
Steam Hammers, &c., *Makers of.*
Dienelt, Eisenhardt & Co., Philadelphia, Pa. ... 36
Dudgeon Richard, 24 Columbia, N. Y. ... 9
Steam Pumps, &c., *Manufacturers of.*
Cameron A. S., East 23d, N. Y. ... 36
Clayton Steam Pump Works, 14 and 16 Water st., Brooklyn, N. Y. ... 38
Crane Bros. Mfg. Co., Chicago, Ill. ... 36
McGowan John H. & Co., Cincinnati, O. ... 37
Storer G. W., 132 N. 3d, Philadelphia ... 16
The Norwalk Iron Works Co., So. Norwalk, Ct. ... 35
Valley Machine Co., Easthampton, Mass. ... 37
Steel Castings, *Manufacturers of.*
Chester Steel Castings Co., 407 Liberty, Phila., Pa. ... 38
Eureka Cast Steel Co., Chester, Pa. ... 38
Flagg Stanley G. & Co., Philadelphia ... 38
Pittsburgh Steel Casting Co., Pittsburgh, Pa. ... 38
Steel Importers.
Carr J. & Riley, 30 Gold, N. Y. ... 30
Hobson Francis & Son, 97 John, N. Y. ... 30
McCoy & Co., 134 and 136 Duane, N. Y. ... 8
Pierson & Co., 24 Broadway, N. Y. ... 4
Wolff, Kahn & Co., 46 Cliff, N. Y. ... 30
Steel (Mushet's Special.)
Jones B. M. & Co., 11 and 13 Oliver, Boston, Mass. ... 30
Steel Manufacturers.
Albany & Rensselaer Iron & Steel Co., Troy, N. Y. ... 30
Atha, Benjamin & Co., 211 Pearl, N. Y. ... 30
Cleveland Rolling Mill Co., Cleveland, O. ... 30
Gautier Steel Co., Ld., Johnstown, Pa. ... 3&30
Midvale Steel Works, Nicetown, Phila., Pa. ... 6&30
Miller, Metcalf & Parkin, Pittsburgh ... 30
Naylor & Co., 99 John, N. Y. ... 30
Pennsylvania Steel Co., 208 S. 4th, Phila. ... 6
Philadelphia Steel Forge, Philadelphia, Pa. ... 6
Rowland Wm. & Harvey, Frankford, Phila. ... 38
Sanderson Geo. & Co., 30 Gold, N. Y. ... 30
Smith, Sutton & Co., Pittsburgh, Pa. ... 30
Singer, Nimick & Co., Pittsburgh, Pa. ... 6
Spencer J. R. & Son, Sheffield, England ... 30
Standard Steel Works, Philadelphia, Pa. ... 4
The Edgar Thomson Steel Co., 57 Broadway, N. Y. ... 31
The Steel Co. of Scotland, 72 Pine, N. Y. ... 30
Wardlow S. & Co., Sheffield, England ... 30
Steel Spiral Springs, *Manufacturers of.*
Cary & Moen, 234 W. 29th, N. Y. ... 3
Chatillon John & Sons, 91 and 93 Cliff, N. Y. ... 9
Steel Tube Cleaners.
The Chalmers-Spence Co., foot 9th St., E. R., N. Y. ... 31
Stocks and Dies.
Holroyd & Co., Waterford, N. Y. ... 13
Wiley & Russell Mfg. Co. Greenfield, Mass. ... 34
Stoppers, Black Lead.
Taunton Crucible Co., Taunton, Mass. ... 30
Stove Boards, *Manufacturers of.*
Ansonia Brass and Copper Co., 19 and 21 Cliff, N. Y. ... 9
Stove Trucks.
Tucker Alarm Till Mfg. Co., Indianapolis, Ind. ... 10
Strops, Razor.
Copeland, Hall & Co., Rochester, N. Y. ... 10
Torrey J. R., Worcester, Mass. ... 24
Stump Puller.
Bunger M. E. & Co., Indianapolis, Ind. ... 10
Tacks.
American Tack Co., Fairhaven, Mass. ... 8
Field A. & Sons, Taunton, Mass. ... 13
Grundy Geo. C., 165 Greenwich N. Y. ... 24
Phillips E. & Sons, South Hanover, Mass. ... 13
Shelton & Co., Birmingham, Ct. ... 9
Taps and Dies.
Carpenter J. M., Pawtucket, R. I. ... 38
Manning H. S. & Co., 111 Liberty, N. Y. ... 37
Wiley & Russell Mfg. Co., Greenfield, Mass. ... 34
Testing Machines.
Olsen Tinius & Co., Philadelphia, Pa. ... 21
Thermometers.
Oswego Thermometer Works, Oswego, N. Y. ... 25
Tower L. C., Rochester, N. Y. ... 11
Tin Plate, *Manufacturers of.*
U. S. Iron and Tin Plate Co., Pittsburgh, Pa. ... 4
Tin Ware, Stamped and Japanned
Block David, 69 Bayard, N. Y. ... 27
Shepard Sidney & Co., Buffalo, N. Y. ...
Vogel William, Brooklyn, E. D., N. Y. ... 3
Tire Upsetters.
Little Giant Mfg. Co., Millport, N. Y. ...
Tool Chests
American Tool Co., 116 Chambers, New York ...
Tools, Steam and Gas Fitters.
Armstrong F., Bridgeport, Ct. ... 34
Saunders' Sons, Yonkers, N. Y. ...
Transportation Lines.
The Iron Line, 33 Coenties Slip, N. Y. ... 6
Trowels.
Bruce Geo. W., 1 Platt, New York ... 24
Try Squares, Bevels, &c. *Makers of.*
Disston Henry & Sons, Phila. ... 32
Tube Expanders.
Dudgeon Richard, 24 Columbia, N. Y. ... 9
Tubes, Telescope.
R. J. Deakin, Philadelphia, Pa. ... 6
Tubing.
Merchant & Co., 507 Market, Phila. ... 27
Twist Drills, *Makers of.*
Morse Twist Drill & Mach. Co., N. Bedford, Mass. ... 34
Upholsterers' Goods.
Turner & Seymour Mfg. Co. 81 Reade, N. Y. ...
Valves, Gas, Water and Steam.
Ludlow Valve Mfg. Co., Troy, N. Y. ... 36
Mohawk & Hudson Mfg. Co., Waterford, N. Y. ... 6
Varnish.
Berry Brothers, Detroit, Mich. ... 7
Vises.
Hall Mfg. Co. 23 Dey, N. Y. ... 21
Millers Falls Co., 74 Chambers, N. Y. ... 21
Stephens Patent Vise Co., 41 Dey, N. Y. ... 11
Watchman's Time Detector.
Imhauser, E., 212 Broadway, N. Y. ... 32
Weather Strips.
Valentine W. T., Albany, N. Y. ... 24
Wheels, Railroad.
Whitney A. & Sons, Philadelphia ... 6
Whetstones.
Pike A. F., Pike Station, N. H. ... 11
White Lead.
Brooklyn White Lead Co., 182 Front, N. Y. ... 32
Colgate Robert & Co., 287 Pearl, N. Y. ... 32
Jewett John & Sons, 182 Front, N. Y. ... 32
Lewis John T. & Bros., 231 S. Front, Phila., Pa. ... 32
Window Balances.
Hugunin R. B., Hartford, Ct. ... 11
Window Springs, *Makers of.*
Hammond W. S., Lewisberry, Pa. ... 24
Wire, *Manufacturers of.*
Cary & Moen, 234 W. 29th, N. Y. ... 3
Cleveland Rolling Mill Co., Cleveland, Ohio ... 30
Gautier Steel Co., Ld., Johnstown, Pa. ... 3&30
Gilbert & Bennett Mfg. Co., 273 Pearl, N. Y. ... 7
Griswold J. Wool, Troy, N. Y. ... 3
Harrison Wire Co., St. Louis, Mo. ... 3
Howard & Morse, 45 Fulton, N. Y. ... 2
Prentiss Geo. W. & Co., Holyoke, Mass. ... 3
Perkins & Choate, 23 Nassau, N. Y. ... 3
Trenton Iron Co., Trenton, N. J. ... 3
Washburn & Moen Mfg. Co., Worcester, Mass. ... 3
Wire Goods, *Manufacturers of.*
Dufur & Co., 36 N. Howard st., Baltimore, Md. ... 3
Gilbert & Bennett Mfg. Co. 273 Pearl, N. Y. ... 7
Wire Nails.
American Wire Nail Co., Covington, Ky. ... 31
Field A. & Sons, Taunton, Mass. ... 13
HP. Nail Co., Cleveland, Ohio ... 28
Wire Rope, Iron and Steel, *Makers of.*
Broderick & Bascom, St. Louis, Mo. ... 2
Hazard Mfg. Co., Wilkesbarre, Pa. ... 2
New York Wire and Wire Rope Co., 23 Astor House, N. Y. ... 29
Roebling's John A. Sons, Trenton, N. J. ... 2
Wrenches, *Manufacturers of.*
Bemis & Call Hdw. & Tool Co., Springfield, Mass. ... 10&24
Coes A. G. & Co., Worcester, Mass. ... 10
Coes L. & Co., Worcester, Mass. ... 21
Girard Wrench Mfg. Co., Girard, Pa. ... 10
Wringers.
Alexander T. J., Boston, Mass. ... 24
Metropolitan Mfg. Co., 32 Cortlandt, N. Y. ... 35
Peerless Wringer Co., Cincinnati, O. ... 11
Zinc.
Hart Lucius & Co., 8 Burling Slip, N. Y. ... 7

for railway uses, viz., wagon tires, of which this company have manufactured thousands, and thousands of tons of rails have been produced by them containing from .28 to .35 per cent. of carbon, having a tensile strength of 36 to 41 tons per square inch, thereby fulfilling all the demands of the railway companies.

"If Mr. Hampton also visited the Rhenish Steel Works at Ruhrort, he certainly saw them making steel rails in large quantities from material of a quality as above mentioned. They produced at least 1500 to 2000 tons of rails by the Thomas-Gilchrist process monthly, and these said rails have received the fullest approbation of all the inspectors.

"This company manufacture spring steel by the process, and in their exhibit at Düsseldorf are to be found fractures of this class of surprising quality, carrying 88 tons per square inch, with a contraction at point of breakage equal to 20 per cent. of the original area.

"What Bessemer steel makers have to fear from the new process is hereby clearly seen, but at what difference of prices the two processes balance each other I am not at liberty to say. The factor is, of course, much influenced by local circumstances, and the amount of carriage, &c., that either class of raw material may be subject to.

"I may add, in conclusion, that after working the process for a year I can conceive no purpose that the steel of Messrs. Thomas & Gilchrist may be used for by railway companies with results less satisfactory than those obtained by the use of Bessemer steel."

Mr. George Chaloner, of London, sends the following communication:

"Referring to Mr. Hampton's letter on this subject in a recent issue of your paper, it would be interesting to many of your readers to know on what grounds, if any, Mr. Hampton bases his opinion that ordinary hard rail steel cannot be made by the Thomas & Gilchrist process. It seems probable that Mr. Hampton has simply been led to this conclusion by a want of acquaintance with the requirements of German railway engineers. In Germany a rail is required to stand tensile elongation and contraction tests which can only be fulfilled by rails lower in carbon than those generally made in England. German rails, therefore, contain on an average under 3-10th per cent. of carbon. English rails, on the other hand, contain nearly always over 3-10ths carbon, and often 4-10ths. German engineers, after a prolonged investigation, have been led to regard this high carbon content of English rails as decidedly dangerous, particularly in cold climates, and of no use as regards increasing durability, so that our high carbon steel rail would be generally rejected by German railways.

"Mr. Hampton has probably seen the regular German steel rail produced by the basic process in Germany, and, finding it rather softer than the highly carburized steel rails of Sheffield, hastily came to the conclusion that the softness was due to an inability to make them harder. Mr. Hampton is, I am sure, too experienced a steel maker to consider the softness or absence of brittleness, due to absence of phosphorus and silicon in the dephosphorized steel, as a disadvantage. To call steel "ingot iron," and imply it is no better than puddled iron, because it is less highly carburized than Sheffield is accustomed to make rail steel, savors of an antiquated prejudice which augurs ill for Hallamshire progress. I believe it is a fact that many thousands of tons of dephosphorized rails containing over 0.3 per cent. of carbon have been made in England, as they have certainly been for foreign orders in Germany and for home consumption in France. There seems no doubt that, as Mr. Hampton says, dephosphorizing does produce soft steel or ingot iron with great facility, but I have, though a careful observer of the development of the new process, failed to find any evidence of its being in any way difficult to manufacture ordinary hard steel by its means.

"Whether it is suitable to the direct production of Bessemer tool steels I do not know, nor is the question an important one."

LABOR AND WAGES.

According to the circular just issued by the Schuylkill Coal Exchange, the rate of wages to be paid for September work is the $2.50 basis. As a full month's time has been made by the men employed at the mines, the pay will be considerable in amount and give to each a good round sum.

The following collieries, drawn to make return of prices of coal for September, 1880, to determine rate of wages to be paid in that month, make the following returns:

Stanton Colliery (Miller, Hoch & Co)	2.57
Coal Run Colliery (Suffolk Coal Co.)	2.49
Conner Colliery (P. & R. C. & I. Co.)	2.45
Beechwood Colliery " "	2.51
Girard Colliery " "	2.53

The average of these prices being 2.51 18-100, the rate of wages for September, 1880, is the 2.50 basis.

It is reported by telegraph that 600 hands in the stove works of Rathbone, Sard & Co. have been thrown out of employment by the strike of 237 molders. It appears the president of the Molders' Union is foreman in the works. He was fined $5 for violation of the rules of the union. He refused to pay it. The men then demanded his discharge, which the firm refused to do. Labor reports say the foreman has paid his fine.

The strike at the rolling mill mine at Steubenville has ended.

Wednesday, the 6th, being the last day of the six days' suspension ordered by the coal combination, all the collieries in the Schuylkill region started work on the 7th with a full quota of men.

A convention of the Shenango Valley (Pa.) mines has been called for the 13th as follows: Whereas, the Shenango region is included in the Western Pennsylvania jurisdiction, and, whereas, the mines of said region did not receive an advance due them on the first day of October, therefore, I call a delegate convention of the miners of the Shenango Valley, and all the miners in anywise attached to that division to meet in the city of Sharon, Pa., at 11 a. m., on Wednesday next, 13th day of October, 1880, to ask for an advance of 15 cents per ton for mining. Each mine to have one duly accredited delegate.

Shenandoah, Pa., has, within two miles of the center of the town, 14 collieries. These employ 300 to 400 men and boys, with a monthly pay roll of $100,000.

All the State troops in the disturbed Hocking Valley mining region have been ordered home, on account of the abandonment by the Central Mining Company of the sliding scale of prices and their agreement to pay the miners instead, at the rate of 80 cents per ton, the prevailing price in that region. During the struggle, four companies of troops in all, were required to keep the peace, two lives were lost and a considerable number of white men were wounded by the militia—the number being variously reported at from eleven to twice that number.

The puddlers at the Roane Iron Works, Chattanooga, Tenn., have been advanced 50 cents per ton—now making them $5.

Cohoes, N. Y., is paying $4.75 for puddling.

A Surveyors' Convention.—The Engineers' Club of Philadelphia has issued a circular calling attention to the Convention of Surveyors and Engineers resident in Pennsylvania, to be held in Harrisburg, at Shakspeare Hall, commencing on Wednesday evening, 27th inst. The Convention will remain in session the two following days. Among some of the subjects which will probably be fully discussed are provision by strict laws for periodic tests of instruments (chain and compass); horizontal measurement; the establishment of standard measures and true meridians in each county; the recording and plotting of surveys from true meridian only; marking corners and lines and the maintenance of such monuments or markings; retracing and permanently marking county and township lines; examinations of surveyors as to their professional ability and responsibility for their work; abandonment of the needle in surveying, and a more uniform system of fees and compensation to surveyors. There may also be considered the advisability of providing for a thorough geodetic survey of the State; of creating a Board of State Engineers; of making the position of surveyor one of appointment by the judges, and prohibiting any but authorized surveyors from recording work.

New York Wholesale Prices, October 13, 1880.

HARDWARE.

Anvils.

Eagle Anvils American....₩ ℔ 10c dis 20 %
Wright's....10¾c @ 11c
Armitage's Mouse Hole....9½ @ 9¾c
Trenton....10½c

Anvil, Vise and Drill.

Millers Falls Co., $28.00....dis 20 %

Augers and Bits.

Conn. Valley Mfg. Co.
Douglas Mf. Co.
Humphreysville Mfg. Co.
Ives
Beecher (French, Swift & Co)
Griswold
Nobles Mfg. Co.
Kasson's Patent } dis 40 % from list of Jan 7, 1880.
Cook's, Douglass Mfg. Co....dis 40&10 %
Snell Mfg. Co.'s C. S. Augers....dis 40 %
  " B. Machine....dis 40 %
  " C. S. Bits....dis 40 %
  " Jennings' Bits....dis 25 %
Patent Solid Head....dis 40 %
Lewis' Patent Single Twist....dis 33⅓
Russell Jennings' Auger Dowel, Machine-Dowel and Hand-Rail Bits....dis 10&10 %
Russell Jennings' Augers....dis 15&5&10 %
Russell Jennings' Car and Machine Bits, Boring-Machine and Millwrights' Augers....dis 24&10 %
Imitation Jennings Bits....dis 40&5 %
Ives' "Jennings" Bits....dis 33⅓&10 %
Andrews Bits....dis 40 %
Expansive Bits, Clark's, small, $18; l'ge, $26....dis 25 %
  " Ives'....$20 @ $30—dis 40 %
  " Blake's....$20—dis 40 %
  " Parmelee's....$20 and $30 .dis 33⅓ %
Hollow Augers Ives'....dis 15 %
  " French Swift & Co....dis
  " Douglas....dis 25 %
  " "Bonney's Adjust....₩ doz $48—dis 20&10 %
  " Stearns' Adjust., ₩ doz $48—dis 20&10 %
  " Ives' Expansive....₩ doz $40—dis 30 %
  " Univ'sal Expansive, each $4.50—dis 20 %
Woods....dis 25 %
Gimlet Bits....$7.50 ₩ gross, dis 45 %
  " Diamond....₩ doz $1.10 dis 30&5 %
  " "Bee"....dis 30&5 %
Double Cut Gimlet Bits Shepardson's....dis 40 %
  " Ct. Valley Mfg. Co....dis 50 %
  " Hartwell's....dis 60&10 %
  " Douglass'....dis 40 %
  " Ives'....dis 40 %
Morse's Bit Stock Drill....dis 25 %
L'Hommedieu's Ship Augers....dis 15 %
Watrous Ship Augers....dis 15 %
  " Extension Lip....dis 15 %

Awl Hafts.

Sewing Brass Ferrule....$3.50 ₩ gross—dis 40&10 %
  " " 3.50 " dis 40&10 %
Patent Sewing, Short....$1.00 ₩ doz—dis 10 %
  " Long....$1.40 ₩ doz—dis 10 %
Patent Peg Plain Top....$10.00 ₩ gross—dis 40&10 %
  " Leather Top....12.00 " dis 40&10 %

Awls, Brad Sets, &c.

Awls Sewing, Common....₩ gross $1.70—dis 25&10 %
  " Shouldered Peg....₩ gross 2.45—dis 25&10 %
  " Patent Peg....₩ gross .65—dis 25&10 %
  " Shouldered Brad....₩ gross $2.70—dis 25&10 %
  " Handled Brad....$7.00 ₩ gross—dis 20&10 %
  " Handled Scratch....$7.00 ₩ gross—dis 20&10 %
  " Socket Scratch....$11.00@$1.25 ₩ doz—net
Brad Sets, Aiken's....₩ doz $12.00—dis 40&10 %
  " No. 40, $10.50; No. 41, $12.40....dis 40 %
  " Stanley's Excelsior, No. 1, 90.00 dis 20 %
  " No. 3, 7.80....dis 20&10 %

Axes.

Single Bit, 4½ to 5½ and under....₩ doz $11.00 net
  " 4½ to 6 and over....₩ doz $11.50 net
  " Beveled....50c ₩ doz advance
Double Bit, 4½ to 5½ and under....₩ doz $22.00 net
  " 4½ to 6 and over....₩ doz $23.00 net
  " Beveled....$1.00 ₩ doz advance

Axle Grease.—Frazer's....₩ ℔ 6c

Bag Holders.

Sprengle's Patent, per doz. $18....dis 40 %

Balances.

Ull Spring Balances....dis 50 %

Bells.

Hand, Light Brass....dis 60&10 %
  " Extra Heavy....dis 45 %
  " White Metal....dis 40 %
  " Silver Chime....dis 25 %
  " Globe (Cone's Patent)....dis 40 %
Gong, Abbe's....dis 40&10 %
  " Yankee....dis 40&10 %
  " Barton's....dis 30&10 %
Crank Taylor's....dis 40&10 %
  " Brook's....dis 40&10 %
  " Cone's....dis 40 %
  " Connel's....dis 40 %
Lever, Sargent's....dis 40 %
  " Taylor's Bronze or Plated Lever....net
  " Japanned Lever....dis 40 %
  " R. & E. M. Co.'s....dis 50&10 %
Bell, Brook's....dis 60&10 %
  " Western....dis 60&10 %
Call....dis 50 %
Cow, Common Wrought....dis 40&10&10 %
  " Western....dis 60&10 %
  " Sargent's new list....dis 60&10 %
  " Kentucky "Star"....dis 60&10 %
  " Sargent's new list....dis 60&10 %
Dodge's Genuine Kentucky, new list—
Nos. 0 1 1½ 2 3 4 5 Hog
$12.00 10.00 9.00 8.00 5.00 3.50 2.50 5.00 } dis 30&10

Bellows.

Blacksmiths', Common....dis 45 %
  " Extra and Pittsburgh Pattern....dis 40 %
Moulders....dis 40 %
Hand Bellows....List of Dec. 1, 1879, dis 40 %

Belting, Rubber.

N. Y. Belting and Packing Co....new list net

Bit Holders.

Extension, Barber's....₩ doz $21.00—dis 40 %
  " Ives'....₩ doz $12.00—dis 40 %
Diagonal....₩ doz $14.00—dis 40 %
Angular....₩ doz $15.00—dis 40 %

Blind Adjusters.—Domestic....dis 25 & 15 %

Blind Fasteners.

Mackrell's....per doz. pairs, $1.00, dis 10 %
Van Sand's....No. 2000, per gross, $10.00, dis 55 %
  " old pattern....₩ gross, $9.00 net
Washburn's Patent....dis 25 %
Merriman's....new list net
Mackrell's....₩ doz. pairs, $0.65, dis 10 %

Blind Staples.

Barbed, ⅝ in. and larger....₩ ℔ 12c net
  " ½ in....₩ ℔ 16c net

Blocks.

Differential Pulley Blocks....dis 30 %
Penfield Block Works, Rope and Iron Strap'd..dis 40 %
  " Wrot. Iron Comb. bushed. dis 40 %
  " all steel roll'r. dis 10 %
  " Sheaves....dis 35 %
Stanley R. & L. Co., Rope and Iron Strap'd..dis 40 %

Bolts.

Cast Iron Barrel, Shutter, &c....dis 60&10 %
Cast Iron Chain, Sargent's list....dis 60&10 %
Bush's Lever and Chain Bolts....dis 30 %
Ives' Pat. Door Bolts....dis 60 %
Wrought Barrel....dis 40&10 %
  " Square....dis 60&10 %
  " Shutter, all Iron, Stanley's list....dis 60&10 %
  " Brass Knob....dis 60&10 %
  " Sunk Flush, Sargent's list....dis 66⅔&10 %
  " Stanley's....dis 60&7½ %
  " B.K. Flush, Com'n, Stanley's....dis 60 %
  " Ex. Heavy....dis 55 %
  " Plated Knob & Slide Flush....dis 55 %
Carriage and Tire, Common....dis 75&10 & 10 %
  " Philadelphia, new list....dis 75 %
  " Philadelphia Pattern....dis 70 & 10 %
  " Shelton's....dis 70 %
R. B. & W. Carriage (old list)....dis 65 %
Tire, Am. Screw Co.'s Phila. new list, Nov 1, '79, dis 65 %
Stove—American Screw Co.'s....dis 37½ %
  " Bay State....dis 60 %
  " R. B. & W., new list....dis 60 %
Plow....dis 45 %
  " R. B. & W....dis 45 %
Machine....dis 60 %
Bolt Ends....dis 60 %

Borax....11½c @ 12½c ₩ ℔ net

Boring Machines. Upright. Angular.
First quality no Augers....$5.50 $7.40
Phillips' with Augers....6.50 7.00 net

Braces.

S. Backus....dis 60 %
Wilson Mfg. Co....dis 50 %
Barber's....dis 50 %
Spofford's Patent....dis 40 %
Noble's Patent....dis 40&5 %
Ives' Patent Braces....dis 40&10 %
Common Ball (American)....dis 40&10 %
Amidon's....dis 30 %
Fray's....dis 40&10 %
Barber's Impd....dis 40 %
Buffalo Ball....dis 40 %

Brackets.—Shelf (Sargent's)....dis 60&10 %

Bright Wire Goods (list of Dec 15, 1879)....dis 60 %

Bull Rings.—Union Nut Co....dis 50&5 %
Sargent's....dis 60&10 %
Hotchkiss'....low list dis 35 %
Humason, Beckley & Co.'s....dis 60&10 %

Butts.

Wrought Brass....dis 45 %
Cast Brass, Tiebout's....dis 30 %
  Corbin's....dis 40&10 %
Fast Joint, Narrow....dis 40&10 %
  " Broad....dis 40&10 %
Loose Joint....dis 50&10 %
  " Japanned....dis 50&10 %
  " with Acorns....dis 45&10 %
  " Japanned, with acorns....dis 55&10 %
Parliament Butts....dis 60&10 %
Mayer's Hinges....dis 55&10 %
Loose Pin no Acorn....dis 50&10 %
  " Acorns....dis 50&10 %
  " Japanned....dis 55&10 %
  " Plated Tips....dis 55&10 %

WROUGHT IRON.

Fast Joint Narrow....dis 40&10 %
  Lt. Narrow....dis 40&10 %
  Broad....dis 40&10 %
Loose Joint, Broad....dis 50&10 %
Table Butts, Back Flaps, &c....dis 40&10 %
Inside Blind, Regular....dis 25&10 %
  " Light....dis 40&10 %
Loose Pin, Wrt....dis 50&10 %
Spring Hinges:
  American Spiral Spring Butt Co., Jap'd....dis 25 %
  " " " " Fancy....dis 20 %
  Gem Spiral Spring Butts, Japanned....dis 25 %
  " " " Ornamental....dis 20 %
  Geer's Spring and Blank Butts....dis 25 %
  Sabin Mfg. Co.'s Double Acting....dis 35 %
  Union Spiral Spring, Japanned....dis 25 %
  " " Ornamental....dis 20 %
  Union Spring Hinge Co.'s....dis 25 %
  American Spring Hinge Co.'s....dis 25 %
  Union Mfg. Co....dis 25 %
  Bommer's....dis 25 %
Blind Butts, Parker....dis 60&10&10 %
  Palmer....dis 35&10 %
  Seymour....dis 60&10 %
  Shepard's "Double Locking" Nos. 1 & 2....dis 60&10&10 %
  Shepard's "Noiseless," Nos. 50 & 60....dis 60&10&10 %
  Lull & Porter....dis 60&10 %
  Nicholson....dis 45&10 %
  Huffer....dis 45 %
  Clark's, Nos. 1, 3, 5....dis 60&10&10 %
  Sargent's No. 12....dis 70&10 %

Bow Pins.

Hotchkiss'....low list net
Humason, Beckley & Co.'s....dis 60 %
Sargent & Co.'s....$19.70 and $21.40, dis 60&10 %

Butchers' Cleavers.

Humason & Beckley Mfg. Co....dis 20 %
Bradley's....dis 25 %
Beatty's....dis 25&5 %

1	2	3	4	5	6	7	8
$16.50	19.00	21.50	24.00	27.00	30.00	33.50	36.50

Can Openers.

Messenger's Comet....₩ doz $3.00, dis 25 %
American....₩ doz $2.00, dis
Duplex....₩ doz 25c, dis 15@20 %
Lyman's....₩ doz $3.75, dis 20 %
No. 4, French....₩ doz $2.25, dis 50 %
No. 5, Iron Handle....₩ gross $7.50 dis 10 %
Eureka....₩ doz $2.50, dis 10 %
Sardine Scissors....₩ doz $7.00, dis 55 %
Star....₩ doz $5.00, dis 10 %
Sprague....dis 50 %

Caps—Percussion, ₩ 1000.

U. M. C., F. C. trimmed....50c } dis 10&5 %
  " F. L. ground....70c
U. M. C. Cen. fire ground....70c } dis 10&5 %
  " Double W. proof....$1.40
G. D. & S. B....36c, dis 7½ %
Double Waterproof, in 1-10's....$1.40 } dis 10&5 %
Colt's Pistol....70c
F. L....50c } dis 10&5 %
E. B. 1-10, Trimmed....65c
E. B. 1-10 Ground Edge....70c
Musket, in 1-10's....75c net

Cartridges.—Rim....dis 60&10 %
Central Fire....dis 20 %

Cards.—Horse and Curry....dis 10 %
Cotton....dis 10 %
Wool....dis 10 %

Carpet Stretchers.

Cast Steel, Polished....₩ doz $5.00, dis 30
  Iron Steel Points....₩ doz $2.00, dis 35 %
Bullard's....dis 25 %

Casters.

Bed....new list July, '80, dis 25&10 %
Plate and Shallow Socket " " dis 25&10 %
Deep Socket " " dis 25&10 %

Cattle Leaders.

Humason, Beckley & Co.'s....dis 65&10 %
Sargent's....dis 65&10 %

Chain.

Trace, 6½-1-2....₩ pair 79c } dis
  " 6½-10-3....₩ pair 70c
  " 7-10-2....₩ pair 86c
German Halter Chain, New list Oct. 22, '79....dis 40 %
  " Coil, New list Oct. 22, '79....dis 40 %
Covert Halter, Hitching and Breast....dis 40 %
Oneida Halter Chain....dis 40 %
Galvanized Pump Chain....₩ ℔ 10c net
Jack Chain, Iron....dis 50 %
  " Brass....dis 40 %

Chalk.

White....₩ gross 60c net
Red....₩ gross 80c net
Blue....₩ gross 100c net
White Crayons....₩ gross 100 net

Chisels.

Socket Framing, Crossman....dis 65&5 %
  " Buck Bros....new list, dis 22½ %
  " Merrill....dis 65&10 %
  " Witherby Tool Co....dis 65&10 %
  " Douglass'....dis 65&10 %
  Firmers, Crossman....dis 65&5 %
  " Buck Bros....new list, dis 22½ %
  " Merrill....dis 65&10 %
  " Witherby Tool Co....dis 65&10 %
  " Douglass'....dis 65&10 %
  Corner....dis 65&10 %
Tanged Firmers extra....dis 33⅓&40 %
  " Butcher's....$5.00 @ $5.25 to £
  " Spear & Jackson's....5.00 to £
  " Buck Bros (Shank)....5.25

Clamps.

Iron, Providence Tool Co.'s, Wrt. Iron....dis 25 %
  Adjustable, Gray's....dis 20 %
  " Lambert's....dis 20 %
  " Snow's....dis 40&5 %
  " Hammer's....dis 15 %
  " Stearns'....dis 15&10 %
  Cabinet, Sargent's....dis 65&10 %
  Carriage Makers', Sargent's....dis 65&10 %
  Cord and Tape (T. & S. Mfg. Co.)....dis 30 %

Clips, Axle.

Norway or Best....dis 40&10 %
Superior....dis 45&10 %

Coal Hods.

Griffiths....dis 33⅓ %

Cockeyes....dis 25 %

Cocks, Brass.

Racking....new list, July 10, '80 } dis 40 %
Globe
Plain Bibbs
Ale and Beer

Coffee Mills.

Board and Box....new list, Jan., 1880, dis 35 %
Increase Wilson's....net
Selsor's Pat....$9.50, $10.50, dis 25 %
American (Enterprise Mfg. Co.)....dis 20 %
French Steel....dis 20 %
The Swift (Lane Bros.)....dis 0 %

Combined Dinner Pail and Lantern.

Per doz $15.00....dis 30 %

Compasses, Dividers, &c.

Compasses....dis 45&10 %
Calipers....dis 45&10 %
Dividers....dis 45&10 %
Bemis & Call Co.'s Dividers....dis 60&5 %
  " " Compasses & Callipers....dis 50&5 %
  " " Wing & Inside or Outside....dis 50&5 %
  " " Double....dis 60 %
  " " Call's Pat. Inside....dis 30 %
Cook's....dis 25 %
Excelsior....dis 50 %
Miller's Patent....dis 25 %

Coopers' Tools.

Bradley's....dis 15 @ 20 %

Corkscrews.—Humason & B....dis 33⅓ %
Clough's Wire....dis 25 %

Corn Knives and Cutters.—Bradley's....dis 10 %
Wadsworth's....dis 33⅓ %

Crow Bars.

Cast Steel....₩ ℔ 8¼c
Iron, Steel Points....₩ ℔ 6¾c

Curling Irons, &c.

⅜, ⅝, ¾ in., $1.80 2.00, 2.40....dis 10 %
Curling Tongs....₩ doz $3.65, dis 10 %
Pinching Irons....₩ doz 7.50, dis 10 %

Curry Combs.

Fitch's (List of No. 240, $1)....dis 40 %
Hotchkiss' Novelty....new list, July, 1880, dis 25 %
  " Excelr. Supr. Champion....dis 25 %
Lawrence....new list, July 1880, dis 25 %
Lawrence, with detachable Mane Comb new list July 1880, dis 25 %
Rubber....₩ doz $10.00, dis 15 %

Curtain Pins.—Silvered Glass....net
White Enamel....net

Cutlery.

Meriden Cutlery Co. (Table)....net
Am. Miller Bros. Cutlery Co....dis 25 %
Humason & Beckley, Pocket....dis 33⅓ %
The wm. Rogers Mfg. Co....net
Naugatuck Cutlery Co....list net
Aaron Burkinshaw's Pocket....dis 25 %

Dog Collars.

Embossed Gilt....dis 20 %
Leather....dis 30 %
Brass....dis 25 %

Door Springs.

Torrey's Rod....₩ doz $2.10, dis 10 %
Gray's " ....₩ doz $1.70, net
Bee Rod....₩ doz $1.70, net
Gem (Coil)—
  No. 1, Large, Japanned....₩ doz $3.50 } list net
  No. 2, Medium....₩ doz 2.50
  No. 3, Small....₩ doz 2.00
  Challenge (Coil)— Nos. 9 7 6
  Japanned....₩ doz $2.00 2.50 3.50 } dis 10 %
  Coppered....₩ doz 4.00 4.50 5.00
  Galvanized....₩ doz 3.50 4.00 4.50
  Nickeled....₩ doz 5.50 6.00 7.00
Star (Coil)—For Cop'd, Nickel-Plated, &c. see list.
  No. 4, ("Shoo Fly") Screen door size ₩ doz $1.80 } dis 20 %
  No. 5, Screen Door Size....₩ doz $2.00
  No. 6, Medium....₩ doz 2.50
  No. 7, Large....₩ doz 3.50
Sabin's Lever, No. 1, $1; 2, $1.50; 3, $2; 4, $2.50; dis 30 %
Sabin's Boss....No. 1, $5.40; 2, $4.20; 3, $3.00, dis 50 %
Sabin's Crown....₩ doz $2.75, dis 50 %
Philadelphia....5 in., $5.00; 8 in., $7.00, dis 35 %
Barker's Concealed....dis 20 %
Cowell's....No. 1, $18.00; No. 2, $15.00 ₩ doz, dis 50 %
Rubber, complete....₩ doz $1.80, dis 10 %
Hercules....dis 40 %

Drawing Knives.

Crossman's No. 1....dis 65&5 %
Merrill....dis 65&10 %
Nobles Mfg. Co....dis 15 %
Bradley's....dis 35 %
Adjustable Handle....dis 20 %
Witherby Tool Co....dis 65&10 %
Douglass....dis 65&10 %

Drills and Drill Stocks.

Blacksmiths'....each $2.70 net
Blacksmiths Self Feeding....each $7.50, dis 25 %
Breast P. S. & W....dis 20 %
  " Hotchkiss....dis 20 %
Breast, Wilson's....dis 20 %
  " Miller's Falls....each $3.00, dis 25 %
  " Bartholomew's....each, $2.50 dis 25&10 %
Ratchet, Merrill's....dis 10 %
  " Ingersoll's....dis 25 %
  " Whitney's....dis 20 %
  " Weston's....dis 20 %
  " Moore's Triple Action....dis 20 @ 25 %
Whitney's Hand Drill....dis 50 %
Wilson's Drill Stocks....dis 10 %
Automatic Boring Tools....each $2.25, dis 20 %

Drill Chucks.—Morse's Beach Patent....dis 30 %
  " Adjust..each $10.00, dis 30 %
Danbury....$8.00, dis 30 %

Egg Beaters.

Dover....₩ doz. $2.50 net
National....₩ doz $4.50, dis 33⅓ %
Family....per gross $15; per doz., $1.50 net

Elevator Buckets.

Mill E. Buckets, light, 3½ to 10 in. (Duc's Improved) ₩ 100 $15.00 @ $54.00, net
Mill E. Buckets, heavy, 5 to 10 inches (Duc's Improved) ₩ doz $5.60 @ $10.20 net
Storehouse, (Duc's Patent) 12 to 17, $12.00 @ $30.00....net

Emery and Emery Paper.

Genuine Chester—Regular Nos....₩ ℔
  " " Flour and FF....₩ ℔
  " " in 10-lb. cans....2c extra
Washington Mills—Regular Nos....₩ ℔ 8c
  " Flour....₩ ℔ 5c
Wellington Mills, Grain....₩ ℔ 10c net
  " Flour....₩ ℔ 8c net
Hampden Emery Grain....5c net
  " Flour....3c net
B. & A. Emery Paper....dis 20@25 %

Enameled and Tinned Ware.

Kettles....45 %
Sauce Pans....dis 30 %
Tinned Sauce Pans....dis 30 %

Escutcheon Pins.

Iron....dis 20 %
Brass....dis 45 %

Escutcheons.

Door Lock....Same discounts as Door Locks
Brass Thread....dis 55 %
Wood....dis 25 %

Faucets.

Fenn's....dis 40 %
Fenn's Cork Stops....dis 33⅓ %
Star....dis 55&10 %
Frary's Patent Petroleum....dis 20&10 %
Wood and Metallic....dis 40 %
West's Patent Key....dis 45 %
Metallic Key, Leather Lined....dis 50 %
Cork Lined....dis 70 %
Enterprise (Self Measuring)....₩ doz, $36.00, dis 20 %

Felloe Plates....₩ ℔ 10c, dis 10 %

Files.

Auburn....$5.00 to £, dis 35 %
Arcade....$5.00 to £, dis 20 %
Black Diamond, new list....dis 30 %
E. M. Boynton's....new list, dis 25 %
Nicholson....(Nicholson List) dis 30 %
Madden & Cockayne File Co....dis 20 %
Heller & Bros (new list)....dis 15 %
Hiscox File Mfg. Co., new list....dis 20 %
J. & Riley Carr....4.50 to £
Johnson & Bro....dis 20 %
Butcher's....4.50 to £
Walter Spencer & Co.'s "Diamond"....4.50 to £
Fisher's....4.75 to £
Moss & Gamble....4.50 to £
H. Disston & Sons (new list)....dis 30 %
Western (new list)....dis 20 %
Limet & Co. (French)....$4.25 to £
Union File Works (new list)....dis 30 %

Fluting Machines.

Knox, 4-inch Rolls....$3.25 each } dis 10 %
  " 6 " " ....4.00 "
  " 8 " " ....6.50 "
Peerless, 4-inch Rolls....4.00 each net
  " 5 " " ....4.75 each net
Eagle, 3½-inch Roll....$2.15, dis 10 %
  " 5½ " " ....$2.85, dis 10 %
Eureka, No. 1, 7-inch Roll....6.00 each, dis 10 %
  " No. 2, 4-inch Roll....4.00 each, dis 10 %
Crown....4½-in. $3.50; 6-in. $4.00; 8-in. $6.50 each dis 10 %
Star....4½ in., $4.00; 6 in., $5.00 each dis 10
Crown Jewel....6 in., $3.40 each, dis 10 %
American, 5 in., $3; 6 in., $3.40; 7 in., $4.50 each, dis 10 %
Domestic Fluter....1.50 each net
Geneva Hand Fluter, No. 1....₩ doz $15, dis 20 %
Crown Hand Fluter, Nos. 1, $15.00; 2, $12.50; 3, $10.00 ₩ doz....dis 10 %
Shepard Hand Fluter....No. 75 ₩ doz $15, dis 10 %
  " " " No. 90, $9.00; No. 110, $7.25;
  " " " No. 100, $6.00 ₩ doz....net
Clark's Hand Fluter....₩ doz $15.00, dis 20 %
Combined Fluter and Sad Iron....₩ doz 15.00, dis 30 %
Buffalo....₩ doz 10.00, dis 10 %

Fluting Scissors....dis 45 %

Forks.

Hay, Manure and Spading....dis 40&5 %
Plated "A 1, Rogers & Bro....dis 33⅓&5 %
  " Reed & Barton....dis 33⅓&5 %

Fruit and Jelly Presses.

Enterprise Mfg. Co....dis 20 %
American....dis 20 %

Fry Pans.

Burnished, list as follows....dis 55 %

No.	0	1	2	3	4	5	6	7	8
₩ doz.	$3.00	$3.75	4.25	4.75	5.25	6.00	7.00	8.00	9.00

"Acme"....dis 45 %

Gauges.

Marking, Stanley's....dis 45&10 %
  " Chapin's....dis 50&10 %
Wire....dis 10 %
  " Smith's Patent....₩ doz 18.00, dis 40 %

Gimlets.

Nail and Spike....dis 45 %
"Bee" Gimlets....₩ gross $12.00 dis 60&10 %
"Eureka Gimlets....dis 50 %
"Diamond Gimlets....dis 40 %
Double Cut Shepardson's....dis 40 %
  " " Hartwell's....dis 50 %
  " " Ives'....dis 50 %
  " " Douglass'....dis 40 %

Glue Pots.

Tinned and Enameled....dis 30 @ 35 %
Family, Howe's "Eureka"....dis 40 %
  " L. F. & C.'s "Handy"....dis 25 %

Grindstone Fixtures.

Sargent's Patent....dis 65&10 %
Reading Hardware Co., new list....dis 25&10 %
  " " " "Keystone"....dis 25&10 %

Gun Wads.

U. M. C. B. E. 11 up....$2.00 } dis 5&5 %
  " " 9 & 10....2.30
  " " 7 & 8....2.00
  " P. E. 11 up....3.10
  " " 9 & 11....4.00
  " " 7 & 8....4.80

Halters.

Covert's Pat. Rope....dis 50 %
Horse and Cattle Ties, Covert's....dis 50 %

Hammers.

Maydole's....dis 15 %
Cheney's....dis 25 %
H. Hammonds (new list July 20, '80)....dis 20 %
Humason & Beckley....dis 50 %
Verree....dis 5 %
Magnetic Tack, Nos. 1, 2, 3, $1.25, 1.50 and 1.75 dis 20&10 %
Warner & Noble's....dis 10 %
Kip's (old list)....dis 20 %
Yerkes & Plumb....dis 15 %

Hand Cuffs and Leg Irons.

Providence Tool Co.'s Hand Cuffs, $15.00 ₩ doz } dis 10 %
  " Leg Irons, $25 ₩ doz
Tower's....dis 25 %

Handles.—Door or Thumb Latches—
Nos.... 0 1 2 3 4
Per doz....$0.80 1.00 1.18 1.35 1.50....dis 55&10 %
Roggin's Latches....per doz 35c@40c net
Bronzed Iron Drop Latches..₩ doz $0.90 @ 1.15 dis 10 %
Jap'd Store Door Handles—Nuts. $2.00; Plate $1.35 no Plate, $1.08....dis 10 %
Barn Door....per doz $1.80, dis 10 %
Wrought Chest....dis 60&10 %
Surface Chest, Sargent's list....dis 60&10 %
Flush Chest....dis 60&10 %
Lifting....dis 55&10 %
Saw and Plane....dis 40&10 %
Boynton's Pat. Loop Saw Handles....dis 25 %
  " " Centennial Saw Handles....dis 25 %
Hammer and Hatchet....dis 20 %
Brad Awl....₩ gross $2.00, dis 20&10 %
Hickory Firmer Chisel, assorted, ₩ gross $4.50 } dis 20&10 %
  " " " large, " 5.00
Apple " " assorted, " 5.00
  " " " large, " 6.00
Socket " " assorted, " 3.00
  " Framing " assorted, " 5.00
File, assorted, ₩ gross....2.75
Auger, assorted, ₩ gross....6.00
  " large....7.00
Patent Auger, Ives'....dis 25
  " Douglass'....₩ set $1.25, net
  " Swan's....₩ set $1, net

Hangers.

Barn Door, old patterns....dis 50&10 %
  " New England....dis 60&10 %
Novelty....dis 40 %
Challenge....dis 50 %
Climax (Anti-Friction)....dis 50 %
Sterling Improved (Anti-Friction)....dis 60&10 %
Cheritree....dis 50 %
Kidder's....dis 40 %

Harness Snaps.

Henshaw's...List of 1¼ changed to 14.00, dis 50&10 %
Judd's.... " " " 14.00, dis 50&10 %
Fitch's (Bristol) " " 14.00, dis 50&10 %
Hotchkiss'....dis 10 %
Andrews'....dis 50 %
Sargent's....dis 60&10 %
"German....dis 60&5 %
Covert....dis 40 %

Hatchets.

Isaiah Blood....dis 15 %
  Shingling, Nos. 1 2 3....₩ doz $7.25 $8.00 $8.75
  Claw, Nos. 1 2 3....₩ doz 7.75 8.50 9.25
  Lathing, Nos. 1 2 3....₩ doz 7.50 8.00 8.50
Hunt's....dis 15&5 %
  Shingling, Nos. 1 2 3....₩ doz $7.25 $8.00 $8.75
  Claw, Nos. 1 2 3....₩ doz 7.75 8.50 9.25
  Lathing, Nos. 1 2 3....₩ doz 7.50 8.25 9.00
Hurd's....dis 33⅓
  Shingling, Nos. 1 2 3....₩ doz $8.00 $8.50 $9.00
  Claw, Nos. 1 2 3....₩ doz 9.00 9.50 10.00
  Lathing, Nos. 1 2 3....₩ doz 8.00 .50 9.00
Yerkes & Plumb....dis 15 %
  Shingling, Nos. 1 2 3....₩ doz $7.50 $8.00 $8.50
  Claw, Nos. 1 2 3....₩ doz 8.25 8.75 9.25
  Lathing Nos....₩ doz 7.50 8.00 8.50
Simmon's....dis 2c
  Shingling, Nos. 0 1 2 3....₩ doz $7.50 $8.00 $8.50 $9.00
  Claw, Nos. 1 2 3....₩ doz 9.00 9.50 10.00
  Lathing, Nos. 1 2 3....₩ doz 8.00 8.50 9.00
  Broad, Nos. 1 2 3 4....₩ doz 9.00 10.00 12.00 14.00
  " Nos. 5 6 7 8....₩ doz 16.00 18.00 20.00 22.00
Collins....dis 10 %
  Shingling, Nos. 1 2 3....₩ doz $6.00 $6.50 $7.00
  Claw, Nos. 1 2 3....₩ doz 6.50 7.00 7.50
  Lathing, Nos. 1 2 3....₩ doz 6.00 6.50 7.00

Hay Knives.

"Lightning"....₩ doz $20.00 net
Wadsworth's....dis 33⅓

Hinges.

Gate, Western....₩ doz $6.25, dis 60 %
  " N. E....₩ doz $10.13, dis 60&5 %
  " N. E. Reversible....₩ doz $6.50, dis 60
Gate, Clark's No. 1....₩ doz $6.00, dis 60 %
  " N. Y. State....₩ doz $0.50, dis 60 %
  " Automatic....₩ doz $12.50 dis 40 %
  " Common Sense....dis 10 %
  " Seymour's....dis 40&10 %
  " Shepard's....Nos. 10, 20 & 25, dis 50 %
Rolled Blind Hinges....dis 60&10 %
Rolled Plate....dis 60&10 %
Rolled Raised....dis 6 &10 %
Wrought Strap and T, list Dec. 20, '77....dis 45&10 %
Plate Hinges { 8, 10 & 12 in. $6.50 ₩ 100 ℔ } ....dis 10 %
"Providence" { over 12 in. $5.20 ₩ 100 ℔
Screw Hook and { 8, 10, 12 in., $6.75 ₩ 100 ℔ } dis 10 %
  Strap....{ 14 to 36 in., $5.50 ₩ 100 ℔
Heavy Welded Hook { 8 to 12 in. $6.75 ₩ 100 ℔ } dis 10 %
  { 14 in. & up, 5.50 ₩ 100 ℔
Screw Hook and Eye....⅝ & 1 in., 90; ¾ in., 90; ⅝ in., 100; ½ in., 120 } dis 20 %

Hoes.—Riveted Shank....per doz, $5.00; dis 35 %
Socket....₩ doz $5.25, dis 35 %
Grub....dis 15 %
Planters'....dis 30 %
Scovill Pattern....dis 33⅓ %
Scovill Pattern, Handled....dis 35 %
Hick's Pat., Solid C. S. Planters'....dis 40&10 %
  " Scovill Pattern....dis 40&10 %
Winsted & Lane, Planters, Handled....dis 20@25 %
  " Scovill Pattern....dis 20@25 %

Hooks.

[illegible]

Horse Nails.

[illegible]

Horse Shoes.—Burden....₩ keg 4.37½
R. I. Horse Shoe Co., Perkins' Improved Light, Medium and Heavy....₩ keg 4.37½
Mule Shoes....₩ keg 5.37½

Ice Awls, Chisels, &c.

American Ice Chisel....₩ doz, $5.50 net
National....[illegible]
Novelty Ice Breakers....[illegible]
White's....[illegible]
Dunlap's Ring Picks....[illegible]
Wood Head Picks, Sargent's....[illegible]
Iron....[illegible]
Ice Mallets Pick in Head....₩ doz 1.75 net
Ice Axes small, Cast or Malleable....₩ doz 3.00 net
Kitchen Ice Tongs....₩ doz 1.20 net
Combination Ice Tools....dis 20 %

Kettles.

Brass, 7 to 13 inches inclusive....₩ ℔ 35c net
Brass larger than 13 inches....₩ ℔ 36c net
Enameled....dis 45 %

Knives.

Ames' Butcher Knives....dis 30 %
  " Shoe....dis 30 %
  " Bread....dis 30 %
Moran's Shoe and Bread Knives....dis 30 %
Hay and Straw—Wadsworth's....dis 33⅓ %
Table and Pocket....See Cutlery

Knobs.

Carriage (Jap'd 80c. ₩ gross)....dis 10 %
Base—Common....dis 40 %
Hemacite Door Knobs....New list, dis 35&10 %
Door, Mineral....[illegible]
  " Por....} Same discounts as Door Locks.
  " Jap'd....
Furniture, Plain....750 gross tack, dis 25 %
  Wood Screws....dis 25 %

Picture (T. & S. Mfg. Co.)....dis 50&10 %
  " Sargent's....dis 60&10 %
Hemacite Picture....dis 50&10 %
Shutter, Porcelain....dis 60&10 %

Ladles.

Melting—Sargent's....dis 50&10 %
  " Reading....dis 50&10 %
  " Monroe's Patent....₩ doz $4.00, dis 40 %

Lanterns.

Tubular....No. 0, $6.65; No. 1, $10.15 } net
  " With Guards 50c extra
Hurricane No. 2....₩ doz $5.75, net
Peerless....No. 5, ₩ doz $11.75, dis 10 %
Brady's Patent....dis 10 %
Ætna....dis 10 %
Yankee....dis 10 %
De Beque....dis 10 %
Police....Small, $7.00; Med., $8.25; Large, $9.00, dis 10 %
Convex Reflector....$2.75 ₩ doz, dis 10 %

Lemon Squeezers.

Porcelain Lined....₩ doz $6.00—dis 30 %
Wood....₩ doz $2.00—dis 30 %
Eureka, Tinned....₩ doz $5.00, dis 30 %
Dunlap's Improved....₩ doz $4.00 net
Sammis'....No. 1, $7.00; No. 2, $12.00 ₩ doz, dis 45 %
Townsend's Patent....dis 10 %

Lines.—Linen Fish....dis 50 %
Cotton Chalk....dis 55 %
Sil. Lake Chalk....Nos. 0, 1, 2, 3, $6.00, $6.50, $7.00, $7.50....dis 30 %
Mason's Linen....dis 30 %
Wire Clothes, Galvanized....each 10 @ 40c net

Locks and Latches.

Cabinet—Eagle....} Changes made in list price of some numbers July 1, 1880, and also July 15, dis 10&5 %
  " Gaylord....
  " Bridgeport....
  " A. E. Deitz....
Trunk....dis 10 %
Langstroth & Crane's List Jan. 1 '77.
  Round Key, No. 1 to 4....
  " No. 5 to 11....
Flat Key....dis 33⅓&10 %
A. E. Deitz, Flat Key....dis 25 %
Yale Lock Co., Flat key....dis 25 %
"Shepardson" or "U. S."....dis 35 %
"Feiter" or "American"....dis 35 %
Plate....dis 33⅓&10 %
F. Many's "Extension Cylinder"....$10.50 ₩ doz, net

DOOR LOCKS, &C.

Branford....} New list June 10, 1880, dis 50&5 % cash
Norwalk....
Norwich....
P. & F. Corbin....
Russell & Erwin....
Mallory, Wheeler & Co....
Reading Hardware Co....
Trenton Lock Co....
Padlocks—Russell & Erwin....
  " Mallory, Wheeler & Co....} and 5 % for cash
  " Wm. Wilcox & Co....
  " Yale Lock Mfg. Co.'s "Standard"....dis 40 %
  " Romer's....dis 30 %
  " Conestoga....dis 30 %
  " J. H. McWilliams....dis 40 %
  " A. E. Dietz....dis 40 %

Mallets.—Hickory....dis 20&10 %
  " Lignumvitae....dis 20&10 %
Penfield Block Works, Lig., Apple & Hickory..dis 30 %

Meat Cutters.

Sargent's....dis 40 %
Dixon's (P. S. & W.) Nos. 1 2 3 } ₩ doz. $14.00 17.00 19.00 30.00—dis 30 %
Miles' Challenge....Nos. 1 2 3 } ₩ doz. $22.00 ....dis 30 %
Perry's Nos. 1 2 3 4 G'r'd
  Each....$3.00 4.00 5.00 11.00 13.00 36.00—dis 30 %
Woodruff's (P. S. & W.)....Nos. 100 ₩ doz. $15.00 18.00 ....dis 30 %
Hales'....Nos. 11 12 13 } ₩ doz....$27.00 33.00 45.00....dis 40&10&10 %
Draw Cut....Nos 5 } Each....$60.00 75.00 80.00 225.00....dis 25 %
American....
  Nos.... 1 2 3 4 5 6
  Each....$1.00 7.00 10.00 25.00 50.00 60.00
Silver & Deming....dis 25 %
Pennsylvania....dis 50 %
  Nos.... 1 2 3
  ₩ doz....$24.00 28.00 36.00....dis 25 %
Beef Shavers (Enterprise Mfg. Co.)....dis 20 %

Mincing Knives.

Am., (3d quality) per gross, 1 blade, $7; 2 blades, $12, 3 blades, $18....
Lathrop's....dis 30 %
Smith's....₩ doz $1.75, dis 10 %
Cowles Hdw. Co....dis 40&10 %

Molasses Gates.

Stebbins Pattern....dis 50 %
  " Genuine....dis 50&10 %
  " Tinned Ends....dis 50 %
Chase's Hard Metal....dis 50 %
Bush's....dis 50&10 %
Lincoln's Pattern....dis 50&10 %
Weed's....dis 45 %

Nails.....See Trade Report

Nuts and Washers.

Square Nuts....7c off list
Hexagon Nuts....7c off list
Washers....[illegible] list

Nut Crackers

Table (Humason & Beckley Mfg. Co.)....dis 33⅓ %
Blake's Pattern....₩ doz $3.00, dis 10 %
Turner & Seymour Mfg. Co....dis 40 %

Oakum.

Best....₩ ℔ 11c
U. S. Navy....₩ ℔ 10c
Navy....₩ ℔ 8½c

Oilers.—Zinc and Tin....dis 45 %
Brass and Copper....dis 50 %
Malleable (Hammer's)....₩ doz $5.00, dis 10 %
Prior's Patent or "Paragon Zinc....dis 45 %
  " Brass....dis 45 %
Olmstead's, Tin and Zinc....dis 45 %
  " Brass and Copper....dis 50 %
Broughton's, Zinc....dis 45 %
  " Brass....dis 50 %

Ox Balls....dis 40&10 %

Pencils.

Faber's Carpenters'....High list, dis 40&10 %
  " Round Gilt....₩ gross [illegible]
Dixon's Lead....₩ gross 40c net
  " Lumber....₩ gross 40c net
Dixon's Carpenters'....dis 25 %

Packing, Steam.

N. Y. Belting and Packing Co....new list net

Picture Nails.

Brass Head, Sargent's List....dis 50&10 %
  " T. & S. Mfg. Co....dis 50&10 %
Porcelain Head, Sargent's List....dis 50&10 %
  " Judd's List....dis 50&10 %
Porcelain Head, T. & S. Mfg. Co....dis 50&10 %
Niles' Patent....dis 25 %

Pinking Irons....₩ doz 75c, net

Plaiting Machines.

Magic....₩ doz $10.00, net
Astor Plaiting Machine....dis 20 %
Crown Plaiting Machines....dis 25 %
  " 6in., $8 ; 8in., $10.00 each

Planes and Plane Irons.

Bench, First Quality....dis 22½ & 7½ %
  " Second "....dis 30 %
Moulding....dis 22½ %
Bailey's (Stanley R. & L. Co.) new list Jan. '79, dis 25 %
The Stanley (S. R. & L. Co.)....dis 25 %
Bailey's "Victor"....dis 25 %
Defiance Adjustable....dis 25 %
Plane Irons, Butcher's....dis 25 %
  " Buck Bros....dis 25 %
  " Auburn Tool Co....dis 25 %
  " The Globe Mfg. Co. "Baldwin Iron"....dis 25 %
  " Ohio Tool Co....dis 5&10 %
  " Sandusky Tool Co....dis 25 %

Pliers and Nippers.

Button's Patent....dis 33⅓ %
Hall's Pat. Compound Lever Cutting Nippers No. 3, 4 in., $20; No. 5, 7 in., $30 ₩ doz....dis 25 %
Humason & Beckley Mfg. Co....dis 20 %
Gas Pliers....dis 25 %
Eureka Pliers and Nippers....dis 25 %
Russell's Parallel....dis 25 %
P. S. & W. Cast Steel....dis 25 %
  " Tinners' Cutting Nippers....dis 15 %

Plumbs and Levels.

Disston's....dis 30 %
Stanley R. & L. Co.'s Pat. Adjustable....dis 30 %
  " Non-Adjustable....dis 30 %
Chaplin's Patent Adjustable....dis 30 %
  " Non-Adjustable....dis 30 %
Standard Rule Co.'s New Adjustable....dis 30 %
  " Non-Adjustable....dis 30 %
Johnson's Patent Adjustable....dis 30 %
Pocket Levels....dis 30 %
Davis' Inclinometers....dis 25 %

Post Hole and Tree Augers.

Samson Post Hole Digger....₩ doz $27.00, dis 20 %
Fletcher Post Hole Augers....₩ doz $17.00, dis 20 %
Vaughan's Post Hole....[illegible]
Eureka Diggers, 7, 8 and 9 in. ₩ doz $40.00....

Pruning Hooks and Shears.

Disston's Combined Pruning Hook and Saw per doz $19.00, dis 20 %
  " Pruning Hook....dis 20 %
E. S. Lee & Co.'s Pruner....dis 20 %
Pruning Shears....₩ doz $6.50@$18.00 %

Pulleys.

Hot House and Tackle....dis 50&10 %
Jap'd Screw....dis 50&10 %
Brass Screw....dis 50&10 %
Jap'd Side....dis 50&10 %
  " Clothes Line....dis 50&10 %
Hay Fork Solid Eye, $4.00; Swivel, $5.00, dis 25 %
  " "Anti-Friction"....dis 25 %
  " "F" Common and Pat. Bushed....dis 25 %
  " Tarbox Pat. Iron....dis 25 %
Shade Rack....dis 25 %

Punches.

Belt or Drive....₩ doz $2.00: 2.25: 2.40, dis 25 %
Bemis & Call Co.'s Cast Steel Drive....dis 20 %
  " " Spring Socket....dis 20 %
Spring....dis 20 %
  " Leach's Patent....dis 20 %
Bemis & Call Co.'s Spring and Check....dis 20 %
Solid, Tinners'....dis 20 %

Rail.
Sliding Door Wrought Brass......⅌ ℔ 42c dis 20 %
" " Iron, Painted . ⅌ foot 10c. dis 60&10 %
Barn Door....Inch......... ½ ⅝ ¾
Per 100 feet. $2.60 3.60 5.60—dis 10 %
" for N. E. Hangers—
Small. Med. Large.
Per 100 feet.......$2.10 2.70 4.30—net

Razors.
J. R. Torrey Razor Co..........dis 10 @ 20 %

Razor Straps.
Genuine Emerson..........dis 40@50 %
Badger's Emerson..........dis 40
Badger's (not Emerson)..........dis 25 %
Evans'..........dis 40 %
Imitation Emerson..........⅌ doz $2.75, dis 40&10 %
Hunt's..........dis 40&5 %
Chapman..........dis 15 @ 20 %
Saunders's..........dis 10 %
Torrey's..........dis 20 %

Rivets.
Iron and Tinned..........dis 40 %
In bulk, list of May 21..........dis 20 %
Copper Rivets and Burs..........dis 35 %
Nos.. 7 8 9 10 11 12 13 14 15
⅌ ℔..49c 50c 52c 54c 56c 58c 60c 65c 70c
Tinned Iron Belt Rivets and Burs..........dis 20

Rivet Sets..........dis 20&10 %

Rods.
Stair..........New, March 1 '79, 10
" American Patent..........dis 20 %

Rollers.
Barn Door, Sargent's list..........dis 55&10 %
Novelty..........dis 10 %
Acme (Anti-Friction)..........dis 50 %

Rope. Manufacturers' Net List. Sept. 20, 1880
Manila..........½ inch and larger ⅌ ℔ 13 c
" ....⅜ inch ⅌ ℔ 13¼c
" ....¼ and 5-16 inch ⅌ ℔ 14 c
" Tar'd Rope..........⅌ ℔ 12½c
" Lath Yarn..........⅌ ℔ 12½c
" Hay Rope..........⅌ ℔ 13 c
Sisal..........½ inch and larger ⅌ ℔ 10½c
" ....⅜ inch ⅌ ℔ 11 c
" ....¼ and 5-16 inch ⅌ ℔ 11¼c
" Hay Rope..........⅌ ℔ 10½c

Rules.

	Boxwood.	Ivory
Chapin's.. Standard.... Stanley.... Stephens....	dis 6 &10 %	dis 50&10 %

Sad Irons.
From 4 to 10 lbs..........⅌ ℔ 3¾c net
Self Heating..........⅌ doz $6.50 net
" Tailors'..........⅌ doz $18.00 net
Gleason's Shield and Toilet..........dis 25 %
Enterprise Patent Cold Handle..........dis 30 %
Mrs. Pott's Pat. Cold Handle, "Crown"..........dis 30 %
Combined Fluter and Sad Iron..per doz $15.00, dis 15 %

Sand Paper.
Baeder & Adamson's Flint, 00 to 1½..$4.75 ⅌ ream
" " " 2, 2½ & 3. 5.25 ⅌ ream
" " " Assorted 4.75 ⅌ ream
" " Star.......... 3.75 ⅌ ream
" " Emery..⅌ ream $6.50 @ 11.50
(dis 20@25 %)
New England, same list as B. & A. Flint.... dis 20@25 %
Gage's..........dis 20&5 %

Sash Cord.
Common..........⅌ ℔ 14 @ 20c net
Patent..........⅌ ℔ 19c net
Silver Lake Russia Flax..........⅌ ℔ 65c. dis 10 %
" White Cotton..........⅌ ℔ 60c. dis 10 %
" Drab Cotton..........⅌ ℔ 65c. dis 10 %
Raw Hide..........dis 25 %
Steel Ribbon..........dis 10 %

Sash Locks.
Clark's, No. 1, $10.00; No. 2, $8.00 per gross.....dis 33⅓ %
Ferguson's..........dis 33⅓ %
Walker's..........net
Hammond's Window Springs..........dis 25 %
Northup Window Springs.......$9.00 per gross, dis 10 %
The Perfect, Clark & Smith, Plain Jap'd ⅌ gro $10.00 net
" " Por. Knob Jap'd. ⅌ gro 14.00 net
" " Nickel-Plated...⅌ gro 27.00 net

Sash Weights.—Solid Eyes, in 500 ℔ lots and over..........⅌ ℔ 1¾c net

Sausage Stuffers or Fillers.
Miles..........⅌ doz $30, dis 30 %
Perry..........⅌ doz, No. 1, $15; No. 0, $21, dis 30 %
Draw Cut No. 4..........each $30.00, dis 20 %
Enterprise Mfg. Co..........dis 20 %
Silver's..........dis 25 %

Saws.
Disston's Circular..........dis 35 %
" Mill..........dis 35 %
" Cross Cut..........dis 25 %
" Hand, Panel, Rip, &c..........dis 20 %
Boynton's Lightning, Cross Cuts, new list......dis 20 %
" One-Man, all lengths, " ......dis 20 %
" Billet Webs, 30 in. " ......dis 25 %
" Lightning Buck Saws X Far..........dis 25 %
" Lightning Hand, Panel and Rip......dis 25 %
Wheeler & Clemson Mfg. Co.'s Hand..........dis 20 %
W. M. & C. Mfg. Co. Cross-Cuts, except Monarch, dis 20 %
Livingston's Butcher and Kitchen..........dis 20 %
Framed Wood—
Nos.... 101 102 103 104 105
Per doz..$10.00 8.50 10.00 7.50 6.25 net

Saw Frames.
White, Vermont..........⅌ doz $1.35, dis 25 %
Red, Polished and Varnished..........⅌ doz $2.00, dis 25 %
Saw Rods..........$10 list dis, 10&10 %

Saw Sets.
Boynton's Patent X Cut, per doz. $12.00; Hand Saw, per doz.. $10.00..........dis 20 %
Stillman's Genuine..........⅌ doz $4.00 @ $5.40 dis 1 %
" Imitation..........⅌ doz $1.25, dis 20&10 %
Common Lever..........per doz $2.00, dis 20&10 %
Leach's..........No. 0, $8.00; No. 1, $10.00, dis 15 %
Nash's..........No. 1, $8.00; No. 2, $4.00, dis 20&10 %
Hammer, Hotchkiss..........$4.40, dis 10 %
" Bemis & Call Co.'s New Pat..........dis 40&5 %
Bemis & Call Co.'s Lever & Spring hammer..dis 30&5 %
" Plate..........dis 10 %
" Cross Cut..........dis 12½ %
Aiken's Genuine..........$15.00, dis 5 & 10 %
" Imitation..........$7.00, dis 50 %
Hart's Patent Lever..........dis 20 %
Disston's..........dis 20 %

Scales.
Hatch, Counter, No. 171..........⅌ doz $36, dis 35&10 %
" Tea, No. 161..........⅌ doz $15.00 dis 40&10 %
Union Platform..........$6.00, dis 45 %
Fairbanks'..........dis 20 %
Buffalo Scale Co..........dis 40 %
Howe's..........dis 20&5 %
Chatillon's Grocers'..........dis 45 %
" Eureka..........dis 25 %
Family Universal..........dis 50 %
" Favorite..........dis 30 %
" Turnbull's..........dis 30 %
Scale Beams, Chatillon's list..........dis 10 %
" Sargent's list..........dis 40&10 %

Scrapers.
Adjustable Box Scraper (S. R. & L. Co.), $6.00, dis 20&10 %
Box, 1 Handle..........⅌ doz $5.00, dis 10 %
" 2 " ....⅌ doz 6.00 dis 10 %
Defiance Box and Ship..........dis 20&10 %
Foot..........dis 20&10 %
Ship (common)..........per doz $3.00 net
" (Providence Tool Co..........dis 10 %

Screw Drivers.
Douglass Mfg. Co..........dis 20&10 %
Disston's..........dis 50 %
Disston's Patent Excelsior..........dis 50 %
Buck Bros..........dis 25 %
Stanley Rule & Level Co., Varnished Hdls..dis 50&10 %
" Black Handles..dis 40&10 %
Sargent & Co.'s..........dis 50&10 %
Gay's Double Action Ratchet per doz., 4 in., $9.00; 5 in., $10.50; 6 in., $12.00 dis 30 %
Cowles Hdw. Co., No. 1 Extra..........dis 40&10 %
" " Nos. 2 and 3..........dis 50&10 %
" " Nos. 4 and 5..........dis 30 %

Screws.
Flat Hd Iron..........dis 45 %
Round Head Iron..........dis 35 %
Flat Head Brass..........dis 35 %
Round Head Brass..........dis 20 %
Brass and Silver Capped..........dis 40 %
Japanned, list of Plain Screws..........dis 30&10 %
Coach Patent Gimlet Point. List per 100..........dis 50@55 %
Bed..........dis 5@10 %
Machine, Flat Head, Iron, Am. Screw Co..........dis 60 %
" Round Head, Iron..........dis 55 %
Bench, Iron..........dis 55 %
" Wood, Beech..........⅌ doz $3.00, dis 15 %
" " Hickory..........dis 20&10 %
Hand..........dis 25&10 %
Hand Rail, Sargent's..........dis 50&10 %
" Humason, Beckley & Co's..........dis 50 %
" Am. Screw Co..........dis 35 %
Jack (Wilson's)..........dis 30 %

Screw Window Balances.
R. B. Hukunin's, Single g'o., $23.94; gro. $22.68, dis 5 %

Scroll Saws.
Lester, $10.0..........dis 20 %
Rogers, $15..........dis 25 %

Shears and Scissors.
American (Cast Iron..........dis 60&10 %
Clipper Cast Iron..........dis 50&10
Pruning..........see Pruning Hooks and Shears.
Barnard's Lamp Trimmers..........⅌ doz $3.75
Tinners'..........dis 15 %
Seymour's, List, Nov. 25, 1879..........dis 60 %
Heinsch's..........dis 60 %
" Tailors' Shears..........dis 33⅓ %
Mass. Cutlery Co. St. Trimmers..........dis 75 %

Sheaves.
Sliding Door, M. W. & Co., list..........dis 55&2 %
" R. & E. list..........dis 50&2 %
" Patent Roller..........dis 10 %
" Hatfield's..........dis 50&10&2 %
" Russell's Anti-Friction..........dis 50&10&2 %
" Moore's Anti-Friction..........dis 40 %
Sliding Shutter, R. & E. list..........dis 50&10&2 %
" Sargent's list..........dis 55&10 %
Moore's Anti-Friction (Hanging)..........dis 40 %

Shovels and Spades.
Ames, New list, Jan. 16, 1880..........dis 10 %
Hussey Binns & Co., Patent..........dis 15 %
" Association list..........dis 5 %
Old Colony (changes in list Oct. 16, '79)..........dis 15 %
Remington's Lowman's Patent..........dis 25 %
Rowland's..........dis 10 %
Griffiths..........dis 50&10 %

Shovels and Tongs.
Iron and Brass Head, R. & E. list..........dis 50&10&2 %
Polished Steel..........new list, dis 50&10&2 %

Slates.
Square Frames..........by case..........dis 70 %
Less than a case..........dis 60&10 %

Spoke Shaves.
Defiance Metallic..........dis 20&10 %
Iron..........dis 40 %
Wood..........dis 40 %
Bailey's (Stanley R & L. Co.) new list.... dis 20&10 %

Spoke Trimmers.
Bonney's..........⅌ doz $10.00 dis 40&5 %
Stearn's..........⅌ doz $10.00, dis 40 %
Ives'....No. 1, $15.00; No. 2, $12.00 ⅌ doz, dis 40&10 %
Douglass'..........⅌ doz $6.00, dis 40&10 %

Spoons.
Pat. Thread Basting..........dis 30&10 %
" Riveted Table and Tea..........dis 25&10 %
Solid Table and Tea..........dis 40 %
Britannia..........dis 55 %
The Wm. Rogers Mfg. Co..........dis 33⅓&5 %
Reed & Barton..........dis 33⅓&5 %
Hall & Elton..........dis 33⅓&5 %
Holmes, Booth & Haydens..........dis 33⅓&5 %
German Silver..........dis 25&10 %
Cast Steel, Sil. Plated..........dis 35&5 %
Tin (P. S. & W.), Teas..........$1.25 ⅌ gross, net
" Tables..........$3.00 ⅌ gross, net
Tin Cowles Hdw. Co.)..........dis 10 %
" case lots..........dis 20 %

Stocks and Dies..........dis 45&10 %
'Lightning' Screw Plate..........dis 10 %

Stone.
Hindostan Hacker Stone..........⅌ gross $13.00 dis 10 %
Sand Stone..........⅌ ton, dis 33⅓&10 %
Washita Stone..........No 1, ⅌ ℔ 18c net
" ....No 2, ⅌ ℔ 14c net
" Slips..........No. 1, ⅌ ℔ 18c net
" ....No. 2, ⅌ ℔ 14c net
Washita Stone (Boyd & Chase)..........⅌ ℔ 14c net
" Slips (Boyd & Chase)..........20c net
" mo'ted (Boyd & Chase) 6, 7 & 8 in, dis 30 %
" No. 2..........⅌ ℔, 15c. net
Arkansas Stone No. 1, 4 to 6 in..........⅌ ℔ $1.35 net
" No 1, 6 to 9 in..........⅌ ℔ $2.00 net
Turkey Oil Stone (Boyd & Chase)....4 to 8in, $1.00 ⅌ ℔
" Slips..........$2.50 ⅌ ℔, dis 10 %
Lake Superior (Boyd & Chase)..........⅌ ℔ 20c, dis 10&5 %
" Slips..........⅌ ℔ 45c, dis 10&5 %
Grindstones, Family, Loring's..........dis 40&10 %

Stove Polish.
Joseph Dixon's..........⅌ gross $5.75 net
Gem..........⅌ gross $4.50, dis 10 %
Gold Medal..........⅌ gross $6.00, dis 25 %
"Mirror"..........⅌ gross $6.00, dis 5 %
Ruby..........⅌ gross $5.75, net
Rising Sun..........⅌ gross $5.75, net
Dixon's Plumbago..........⅌ ℔ 8c. net

Squares.
Steel..........dis 50 %; full cases, dis 50&10 % } 2½ cash
Iron..........dis 50 %; full cases, dis 50&10 % }
Nickel Plated..........add $2.50 @ $4.00 ⅌ doz, net
Try Squares and T Bevels..........dis 20&10 %
Disston's Try Squares and T Bevels..........dis 25&5 %
Winterbottom's Try and Mitre..........dis 20&10 %

Tacks, Brads, &c.
List of April 5, 1880.
Tinned Swedes Tacks..........dis 35 %
Tinned American "..........dis 35 %
Swedes Tacks, all kinds..........dis 35 %
Copper Tacks and Nails..........dis 25 %
Swedes Hungarian Nails..........dis 20 %
American "..........dis 20 %
Gimp and Lace Tacks..........dis 35 %
Finishing Nails..........dis 45 %
Trunk and Clout Nails..........dis 15 %
Common and Patent Brads..........dis 15 %
Basket Nails..........dis 15 %
Brush Tacks..........dis 15 %
Leathered Carpet Tacks..........dis 25 %
American Cut Tacks..........dis 20 %
Cigar Box Nails..........dis 20 %
Chair Nails..........dis 25 %
All other Tack List goods..........dis 35 %
Double-Pointed Tacks..........dis 40&5 %
Extra 10 % on all.

Tap Borers.
Common and Ring..........dis 15 %
Ives' Tap Borers..........dis 15&10 %
Enterprise Mfg. Co..........dis 20 %

Tapes, Measuring.
American..........dis 20 %
Spring Tapes..........dis 25&10 %

Thermometers.
Tin Case..........dis 70 %

Tobacco Cutters.
Enterprise Mfg. Co. (Champion)..........dis 20 %
Wood Bottom..........⅌ doz $12.00, dis 33⅓ %
All Iron..........⅌ doz $10.50, dis 40 %
Nashua Lock Co.'s..........⅌ doz $18.00, dis 50 %

Toe Calks.—Winsted..........⅌ ℔ 0c. dis 5

Tinners' Tools and Machines.
Machines (P. S. & W.)..........list add 20 %
Tools (P. S. & W.)..........add 6 %

Transom Lifters.
Wollensak's Patent..........dis 20 %

Traps.
Game Newhouse..........dis 30 %
" Newhouse Pattern..........dis 50 %
" Blake's Patent..........dis 40 %
Mouse, Wood, Choker..........⅌ doz holes, 16½c
" Round Wire..........⅌ doz $1.50, dis 10 %
" Cage "..........⅌ doz $2.50, dis 10 %
" Catch-em-alive..........⅌ doz $2.00, dis 10 %
Rat. "Decoy"..........per doz $10.00, dis 10 %

Trowels.
Lothrops Brick and Plastering..........dis 20 %
Reed's Brick and Plastering..........dis 15 %
Disston's Brick and Plastering..........dis 20 %
Peace's Plastering..........dis 30 %
Clement & Maynard's..........dis 10@15 %
Rose's Brick..........dis 15 %
Brades' Brick..........dis 20 %
Worrall's Brick and Plastering..........dis 20 %
Garden..........dis 45 %

Triers.
Butter and Cheese..........dis 25 %

Vises.
Solid Box..........List. of July 1, '79 dis 25 %
" "Crown" (A. H. Hildick) 40 to 100 ℔, 15c net
" Peter Wrights..........15½c
Parallel, Parker's..........dis 10 %
" Wilson's..........dis 40 %
" Howard's..........dis 20&10 %
" Merrill's..........dis 15 %
" Sargent's..........dis 50&10 %
" Trenton..........dis 20 %
" Backus and Union..........dis 40 %
" Oval Slide..........dis 40 %
" Fisher & Norris..........dis 15&10 %
" Prentiss..........dis 25 %
" Stevens'..........dis 20 %
" Simpson's Adjustable..........dis 25 %
"Family." List..........net
Saw Filers, Bonney's..........⅌ doz $24.00, dis 20&10 %
" Stearn's..........dis 20&10 %
" Hopkins'..........⅌ doz $17.50 dis 10 %
Lowell Hand Vises..........dis 20 %
Richardson's Vise and Anvil..........dis 25 %

Washer Cutters.
Smith's Patent..........⅌ doz $12.00 dis 25 %
Johnson's..........⅌ doz $17.00. dis 33⅓ %
Penny's..........⅌ doz $14.00 and $16.00. dis 45 %
Appleton's..........⅌ doz $8.00, dis 20&10 %

Washers.—See Nuts and Washers.

Well Wheels.—Revised list..........dis 60&10 %

Wire.
Brass and Copper.......List of June 10, 1880....dis 20 %
Bright and Annealed.........Nos. 0 @ 18. dis 45 @ 50 %
" " ....Nos. 19 @ 26, dis 52½ @ 57½ %
" ....Nos. 27 @ 36, dis 60 @ 65 %
Coppered..........Nos. 0 @ 18. dis 40 @ 45 %
Galvanized, Nos. 0 to 6..........⅌ ℔ 10c. dis 35 @ 37½ %
" Nos. 7 to 18......market list. dis 35 @ 37½ %
Tinned, Nos. 0 to 18..........dis 37½ @ 42½ %
Cast Steel..........dis 25 @ 30 %
Tinned Broom Wire, Nos. 18 to 25..........dis 47½ @ 50 %
Annealed Fence, Nos. 8 and 9..........dis 45 @ 50 %
" Grape, Nos. 10 to 14..........dis 45 @ 47½ %
Galvanized Telegraph, Nos. 7 to 9..........⅌ ℔ 9c
" " Nos. 10 and 11..........⅌ ℔ 10c
" No. 12..........⅌ ℔ 10½ c
Fence Staples..........⅌ ℔ 7¼ @ 7¾c
" Staples, Galvanized..........⅌ ℔ 8¼ @ 8¾c
Stubs Steel Wire..........$7.00 to $
Japanned Barb Fence..........⅌ ℔ 9c
Galvanized "..........⅌ ℔ 10c
Steel Music Wire, Nos. 12 to 27..........⅌ ℔ $1.25 net
Turner & Seymour Mfg. Co., Picture Wire..dis 80&20 %
Judd's Picture Wire..........dis 80&20 %
Clothes Line Wire, Galvanized..........⅌ coil 30 @ 40c net
Wire Cloth, green and drab..........⅌ sq. ft. 3½ c net

Wrenches.
American Adjustable..........dis 45 %
Baxter's Adjustable "S,"..........list Jan., 1880, dis 20 %
" Diagonal..........dis 20 %
Coes 'Genuine..........dis 50 %
" "Mechanics"..........dis 50&10 %
" Pattern, Malleable..........dis 70 %
Girard Standard..........dis 50&10 %
Girard Agl..........60&10 %
Bemis & Call's Patent Combination..........dis 20 %
" " Merrick's Pattern..........dis 35 %
" " Briggs' Pattern..........dis 25 %
" " Cylinder or Gas Pipe..........dis 40 %
Van Wagoner & Williams' Basin..........per doz $4.50
Aiken Pocket (Bright)..........$6.00, dis 60&10 %
The Favorite Pocket (Bright)..........per doz $6, dis 60 %
Webster's Pat. Combination..........dis 35 %

Wringers. Per doz.
Universal, XX No. 2½..........$60.00
" " No. 2..........63.00
" " No. 1½..........71.00
" " No. 1..........93.00
" " No. 8..........each, 12.00
" " No. 12.......... " 20.00
" " No. 18.......... " 25.00
" " No. 22.......... " 32.00
Peerless, No. 0, no Cogs..........51.00
" No. 1, "..........54.00
" No. 2½, with Cogs..........60.00
" No. 2, "..........63.00
" No. 3, "..........71.00
" No. 4, "..........96.00
Unique, No. 0..........57.00
" No. 1..........54.00
Eureka, No. 1..........54.00
Novelty, No. 10, with Cog Wheels..........60.00
" No. 2, " "..........63.00
Excelsior, No. A, with Folding Bench..........75.00
" No. E, for Set Tubs..........65.00

NEW YORK WHOLESALE PRICES, October 13, 1880.

METALS.

IRON.—DUTY: Bars, 1 to 1½c. ⅌ lb; Sheet, Band Hoop and Scroll, 1¼ to 1½c. ⅌ lb; provided, that none of the above Iron shall pay a less rate of duty than 35 per cent. Pig, $7 ⅌ ton; Polished Sheet, 3c. ⅌ lb; Wrought Scrap, $8 ⅌ ton; Cast Scrap, $6 per ton. Railroad, 70c. ⅌ 100 lbs. Boiler and Plate, 1½c. ⅌ lb.

Iron—American.

Foundry No. 1	⅌ ton	$25.00
No. 2X	⅌ ton	20.00
Gray Forge	⅌ ton	19.50 @ 20.50

SCOTCH.

Eglinton	⅌ ton	21.50 @ 24.00
Coltness	⅌ ton	23.50 @ 24.00
Glengarnock	⅌ ton	23.00 @ 24.00
Gartsherrie	⅌ ton	22.50 @ 23.50

Rails.

Iron	⅌ ton	$57.00 @ 60.00
Steel	⅌ ton	60.00 @ 62.00
Old Rails	⅌ ton	26.00 @ 27.00

Scrap.

Wrought Scrap ⅌ ton ... 25.00 @ 26.00

Bar Iron, from Store.—

Common Iron:
¼ to 2 in. round and square }
1 to 6 in. x ⅜ to 1 in. } ⅌ lb 2.40c

Refined Iron:
¼ to 2 in. round and square }
1 to 6 in. x ⅜ to 1 in. } ⅌ lb 2.60
1 to 6 in. x ¼ and 5-16 ... ⅌ lb 2.90
Rods—⅝ and 11-16 round and square ... ⅌ lb 3.30
Bands—1 to 6 x 3-16 to No. 12 ... ⅌ lb 3.00
Norway Nail Rods ... 7c

Sheet Iron.

	Common American	R. G. American
Nos. 10 to 20	⅌ lb [illegible]	[illegible]
21 to 24	⅌ lb [illegible]	[illegible]
25 to 26	⅌ lb 4¼c	[illegible]
27	⅌ lb 4½c	[illegible]
28	⅌ lb 4¾c	[illegible]

		B.B.	2d qual.
Galvanized, 10 to 20	⅌ lb	8c	7c
21 to 24	⅌ lb	9c	8c
25 to 26	⅌ lb	9½c	8½c
27	⅌ lb	10½c	9c
28	⅌ lb	11c	9½c

Patent Planished ... ⅌ lb 12c; B, 10½c
Russia ... 13 @ 15c
American Cold Rolled ... ⅌ lb 5½ @ 7½c

COPPER.—DUTY: Pig, Bar and Ingot, 5c; Old Copper 4c ⅌ lb; Manufactured (including all articles of which Copper is a component of chief value), 45 % ad valorem.

American Ingot ... ⅌ lb See Trade Report.

SHEATHING, BRAZIERS' COPPER, BOLTS, &c.

Braziers' Copper, ordinary sizes, 16oz. per sq. ft., and over per lb ... 28c
Braziers' Copper, ordinary sizes, under 16 oz. and over 12 oz., ⅌ sq. ft ... ⅌ lb 30c
Braziers Copper 10 oz and 12 oz., ⅌ sq. ft ... ⅌ lb 32c
" " Lighter than 10 oz. ⅌ sq. ft ... ⅌ lb 34c
Circles less than 84 in. in diameter ... ⅌ lb 31c
Circles 84 in. diameter and over ... ⅌ lb 34c
Segment and Pattern Sheets ... ⅌ lb 31c
Locomotive Fire Box Sheets ... ⅌ lb 29c
Sheathing Copper, over 12 oz. ⅌ sq. ft ... ⅌ lb 26c
Bolt Copper ... ⅌ lb 28c
Copper Bottoms ... ⅌ lb 31c
No Copper is Sheathing except 14x48 inches and not o exceed 34 oz. to the sq. ft.

TINNING.

14x48 ... ⅌ sheet 60
All other size Sheets, 2½c. per square foot.
For tinning both sides, double the above amount.

O'NEILL'S PATENT PLANISHED COPPER.—Net.

14x48.

4 and 12 oz. and heavier ... ⅌ lb 36c By the case. ⅌ lb 35c
10 oz. and lighter ... ⅌ lb 39c " " ⅌ lb 38c

Boiler Sizes.

7 in., 14x52. 8 in., 14x56. 9 in., 14x60.
14 and 16 oz. and heavier. ⅌ lb 38c By the case. ⅌ lb 37c
(And all sizes not over 20 in. wide.)

30x60.

4 and 16 oz. and heavier ... ⅌ lb 40c
18 oz. ... ⅌ lb 43c

Brass.

Brown & Sharp's Gauge the Standard for Metal; Old English Gauge the Standard for Wire.

BRASS MANUFACTURERS' PRICE LIST.—dis 20%. June 10, 1880.

Cash prices for Roll and Sheet Brass. For less quantity than 100 lbs. add 30 ⅌ lb.

HIGH BRASS.

All Nos. not thinner than to No. 28, wider than 2 in., not wider than 14 in. ... 30c
All Nos. to No. 28, inclusive, and widths over 14 to 20 in., inclusive ... 34c
All Nos. to No. 28, inclusive, and widths over 20 to 30 in., inclusive ... 38c
½c ⅌ lb advance on each No. above Nos. 28 to 38, inclusive.
All Brass thinner than No. 38 is Platers' Brass, at ... 59c
Sheets 24x48, and all sheets cut to particular sizes and lengths under 30 in., in width wider than 2 in. 37c
Printers' Rules ... 45c
Sheets wider than 30 in. and under 40 in. ... 47c
" 40 in. and over ... 46c
Circular Sheets, in diam. from 4 in. to 14, inclusive ... 30c
" " over 14 " 20, " ... 45c
" " " 20 " 30, " ... 49c
" " " 30 " 40, " ... 55c
" " " 40 in. ... 59c

LOW BRASS.

4c ⅌ lb more than High Brass.
Gilding Metal, 8c ⅌ lb more than High Brass.

Platers' or Gold Metal { In Bars ... 48c; Sawed ... 51c; Planed or Polished ... 44c

FOR SLITTING.

Metal in width 2 in. to ½ in. to No. 28, inclusive, 10. ⅌ lb advance.
Metal, in width 2 in to 1 in., thinner than No. 28, 20. ⅌ lb advance.
Metal, in width 1 in. to ½ thinner than No. 28, 30 ⅌ lb advance
Metal, in width ½ in. to ¼, inclusive, not thinner than No 28, 20. ⅌ lb advance.
Metal, in width ½ in. to ¼ thinner than No. 28, 50. ⅌ lb advance.
Metal, ¼ in. in width and less, 20c. ⅌ lb advance.
Any of the above widths cut to particular lengths, add 70. ⅌ lb.

GERMAN SILVER MARKET METAL AND WIRE.

	Market Metal.	Wire.
4 per cent., 12 inch, to No. 26	$0.42	$0.70
6 " " "	.55	.76
10 " " "	.64	.88
15 " " "	.74	1.05
18 " " "	.80	1.12

German Silver Sheets over 12in. wide and weighing more than 10 lbs., $1.00 ⅌ lb.
Advance 2c. for each additional inch in width above 12 in., and 2c. ⅌ lb on each No. thinner than Nos. 26 to 36, inclusive
All German Silver thinner than No. 36 is Platers, at 5c ⅌ lb additional
German Silver Scrap one-half less than net price of 12 in. Market Metal. German Silver Turnings, Filings and Chips, half the price of Scrap.

BRASS AND COPPER WIRE.

	Gild'g and High Brass.	Low Brass.	Copper.
No. 0 to 20	$0.34	$0.37	$0.15
No. 21	.38	.40	.40
No. 22	.37	.41	.47
No. 23	.38	.42	.48
No. 24	.40	.44	.50
No. 25	.42	.47	.54
No. 26	.45	.49	.56
No. 27	.48	.54	.58
No. 28	.52	.56	.63
No. 29	.54	.59	.66
No. 30	.58	.62	.72
No. 31	.62	.66	.78
No. 32	.66	.70	.84
No. 33	.70	.74	.98
No. 34	.74	.78	1.08

Spring Wire 2c ⅌ lb advance.
Flat, Square and Half Round Wire 5c ⅌ lb advance on Round Wire.
Fancy Wire not less than 10c ⅌ lb advance of Round Wire.
Brass Rods, No. 8 and larger, not less than 2 feet lengths, 38c.
Wire straightened and cut, smaller than No. 8, and not less than 2 feet lengths, 43c.
Wire and Rods less than 2 feet lengths, special rates.
Twelve cents per lb extra for spooling on 1 lb spools

MISCELLANEOUS.

Brass Pail Ears ... $0.40
Brass Door Rail ... .45

SCRAP.—dis 20 %

High Brass Scrap ... 13c
Low " ... 14c
Gilding ... 15c
Turnings, Filings and Chips half the price of Scrap.
Terms—Net cash. Interest to be added after thirty days.

TUBING.—dis 20 % ⅌ lb

Plain No. 2 inclusive above ¼ in. to 3 in ... $0.48
" above 3 in ... .53
Nos. 21, 22, 23, two cents advance on List for each Number.
Nos. 24, 25, 26, four cents advance on List for each Number.
Above No. 26, special rates.
Plain, ¼ inch ... .70
" 3-16 " ... 1.10
" ⅛ " ... 1.50
All Mandrel Drawn Tubes, 5 cents advance on List Prices.
Fancy Tubing to No 20 ... 50c
English, Scotch and Extra Patterns Fancy Tubing to No. 20 ... .55
Tubing Sawed or Cut 2 to 4 feet long, 2 cents advance on List.
And to 2 cents ½ cent for each additional cutting under 2 feet.
All Mandrel Drawn Tubes under ⅜ in., 25 cents per pound advance.

ZINC TUBING.—dis 20 %.

Plain ... .37
Fancy ... .51
Scotch and Extra Patterns ... .56

GERMAN SILVER TUBING.—dis 10 %

4 Per cent	.80
6 "	.88
8 "	1.02
10 "	1.10
12 "	1.35
15 "	1.40
18 "	1.50
20 "	1.60

STEEL.—DUTY: Bars, Ingots, Sheets and Coils valued at 7 cents ⅌ lb, or under, 2¼ cents; over 7 cents, and not above 11, 3 cents ⅌ lb; over 11, 3½ cents ⅌ lb, and 10 ⅌ ct ad val. Railway Bars, 1¼ cents ⅌ lb. Railway Bars, in part Steel, 1 cent ⅌ lb. Provided, that Metal cemented, cast or made from Iron by the Bessemer or pneumatic process, of whatever form or description, shall be classed as steel.

American Cast Steel.

For American Steel see quotations under heading of Pittsburgh.

English Steel.—

Best Cast	⅌ lb	15½c
Extra Cast	⅌ lb	16½c
Round Machinery, Cast	⅌ lb	10c
Swaged, Cast	⅌ lb	10c
Best Double Shear	⅌ lb	15½c
Blister, 1st quality	⅌ lb	13c
German Steel, Best	⅌ lb	11c
2d quality	⅌ lb	10c
3d quality	⅌ lb	9c
Sheet Cast Steel, 1st quality	⅌ lb	15½c
2d quality	⅌ lb	13½c
3d quality	⅌ lb	12½c

ANTIMONY ... See Trade Report.

LEAD.—DUTY: Pig $2 ⅌ 100 lbs; Old Lead, 1½c ⅌ lb; Pipe and Sheet, 2½c ⅌ lb.

American ... 4¾ @ 5¼c
Bar ... 6½c net
Pipe ... dis 10 %
Tin Lined Pipe ... 16c net
Sheet ... 7c dis 10 %
Shot ... Drop 7½c, Buck, 8¼c
Chilled Shot ... 8½c

BABBITT METAL.

N. P. U. ... ⅌ lb @ 80
A. 24c; B, 20c; C, 16c.

TIN.—DUTY: Plates, Sheets, Tagger and Terne, 1.10 ⅌ lb; Electro-galvanized Plates, 3c ⅌ lb; Manufactures of, not enumerated, 35 per cent. ad. val. Bars, Block and Pigs free. Banca, subject to duty of 10 per cent

Banca ... ⅌ lb 25 @ 26c
Straits ... ⅌ lb 23c
English ... ⅌ lb 22c

TIN PLATES.

I C 10x14, 14x20	Prime Charcoal	$6.50
I C 12x12	"	6.75
I X 10x14, 14x20	Charcoal	8.50
I X 12x12	" "	8.75
D C 12½x17		6.00
D X 12½x17		8.00
For each additional X add		2.00

COKE TIN PLATE.

	Best.	Ordinary.
I C 10x14, I C 14x20	$6.00	5.00 @ 5.75
I C 12x20	6.25	5.50 @ 5.75

TERNE PLATE

	Prime Char.	2d qual.	Coke.
I C 14x20	$ 5.75	5.50	5.25
I X 14x20	8.00	....	....
I C 20x28	12.00	11.50	11.00
I X 20x28	16.00	....	...
I C 20x200	22.00	.. .	....
I C 14x20 M. F. Brand			8.25

SOLDER ... No. 1, 12c @ 13c; No 2, 11c

SPELTER.—DUTY: in Pigs, Bars and Plates, $1.50 ⅌ 100 lbs.

American, cash ... 5¼ c
Bergen Port from Lehigh Ore ... 10c
Lehigh, on spot ... 9c

ZINC.—DUTY: Pig or Block, 1.50 ⅌ 100 lbs. Sheet 2 40 ⅌ lb.

Sheet, Cask ... 7¼ @ 7½
" Open ... 7½ @ 8

Paper Stock, &c.

(Dealer's Selling Price.)

Canvas linen	4 @
White cotton, new	4½ @
" " No. 2	3½ @
White linen rags No. 1	5 @
" " No. 2	2½ @
Seconds	2½ @
Soft woolens	.12 @ 1
Gunny bagging	3½ @
Jute Butts	3 @ 3¼
Kentucky bagging	4½ @
Waste paper and scraps	1 @ 1¼
Rope cuttings	1½ @ 3
Kentucky bale rope	4 @ 4½
Grass rope	3¼ @ 3½
Tarred shaking	1½ @
Hard White Shavings, No. 1	4½ @ 4¾
Soft " " No. 1	4 @ 4½
White Shavings, No. 2	3½ @
Mixed " part white	3½ @
Imperfections, No. 2, best folded sheets	3¼ @ 3½
" No. 1. Heavy Stock	3½ @
Book Stock	3½ @
" Heavy	3½ @
" " Light	1½ @ 1¾
Newspapers	2½ @ 2½
Prints	1½ @
Pure Manilas	2¾ @ 3
Bogus Manilas and Hardwares	$1.25 @ 1.60
Commons	90 @ 1.00
Binders' Board Cuttings	1.00 @ 1.25
Straw board Cuttings, clean	1.00
Woolen Tailor Clips	18 @ 19
Satinet	2½ @ 3¼

Paints, Oils, &c.

Paints.

Black Lamp, Coach Painters	⅌ lb 20c
" " Ordinary	5c
" Ivory Drop, fair	12 @ 11c
" " best	21c
Black Paint, in oil	kegs 80 asst'd cans, 110
Blue Prussian, fair to best	40 @ 55c
" " " " in oil	45 @ 55c
Blue Chinese dry	85c
" Ultramarine	18 @ 30c
Brown, Spanish	1¼c
" Van Dyke	10 @ 12c
Carmine, 40	combination price
Green, Chrome	15 @ 25c
" " in oil	14 @ 18 @ 25c
" Paris	good, 25c; best, 30c
" " in oil	" 30c; 44c
Iron Paint, Bright Red	⅌ lb 2½c
" Brown	⅌ lb 1½c
" Purple	⅌ lb 3c
" Ground in Oil, Bright Red	⅌ lb 5½c
" " " Red	⅌ lb 5c
" " " Brown	⅌ lb 4½c
" " " Purple	⅌ lb 6c
Mineral Paints	1¼ @ 4c
Orange Mineral	10c
Red Lead, American	7½c
" " English	none in market
" Venetian (N. C.) dry	$1.65 @ $1.70
" " in oil	asst'd cans, 11c; kegs, 8c
" Indian dry	9 @ 12c
Rose Pink	10 @ 15c
Sienna, American, Raw	4c
" Burnt	4½c
" " in oil	10 @ 16 @ 20c
" Raw	11 @ 15 @ 25c
Umber, Burnt	4 @ 8c
" " in oil	9 @ 12 @ 16c
" Raw	3½ @ 7½c
" " in oil	10 @ 16 @ 18c
Vermillion, Chinese	90c
" English	55 @ 57½c
" Trieste	1.10c
" American, Common	15c
White Lead, American, pure dry	8c
" " " in oil	8½ to 9c
White, Paris, English, prime	in bbls. 2 @ 2½c
Yellow Ochre, French	$1.75
" " " in oil	asst'd cans, 11c; kegs, 8c
" " Vermont	in casks, 1½c
Yellow Chrome	17 @ 27c
" " in oil	14 @ 18 @ 25c
Zinc White American No. 1, dry	5 @ 5½
" No. 1, in oil	9c
" French (Paris)	8 @ 10c
" in oil	@ 10c

Oils.

Linseed, Raw, in casks and bbls	gal. 58c
" Boiled "	61c
Bleached Whale	⅌ gal. 63c
" Sperm	⅌ gal. $1.18
" Elephant	67c
Signal	60
Prime Lard	68c
No. 1	69c
West Virginia	17c @ 24c
Drilling	40c
Empire Cylinder	80c
Miners' Oil	35 to 45c
Fish Oil, pressed	44c
Neatsfoot	75c
Tallow	82c
Machinery	40c
Engine	50c

Sandries.

Asphaltum	9c
Benzine	⅌ gal 16c
Chalk	¾c
" Block	¾c
Dryer, Patent, Am'n	ass't cans, 10½c; kegs, 9c
Frostings	25c
Glue, White	33 @ 44c
" Sheet	20c
Glaziers' Points, Zinc	30c
Gum, Copal	30c
" Damar	25c
" Shellac, English	42c
" " dark	42c
Litharge, English	7½c
Mineral Wool	⅌ lb 1¾ @ 1½c
Pumice Stone, selected Lumps	4 @ 5c
" powdered	2¼c
Putty, in bladders	3c
" In bulk	2c
Spirits Turpentine	42c
Whiting Spanish	1c

Glass.

FRENCH WINDOW GLASS.

Prices current per box of 50 feet.

Single Thick.—Discount 45 to 50 %.

SIZES.	1st.	2d.	3d.	4th.
6 x 8 to 10 x 15	$6.50	$5.75	$5.50	$5.25
11 x 14 to 16 x 24	7.25	6.75	6.25	6.00
18 x 22 to 20 x 30	9.25	8.50	7.75	7.25
15 x 36 to 24 x 30	10.25	9.25	8.25	
26 x 28 to 24 x 36	11.00	10.00	9.00	
26 x 36 to 26 x 44	11.75	10.75	9.50	
26 x 46 to 30 x 50	13.25	12.00	10.50	
30 x 52 to 30 x 54	14.00	13.00	11.25	
30 x 56 to 34 x 56	15.00	13.75	12.50	
34 x 58 to 34 x 60	15.50	14.25	12.75	
36 x 60 to 40 x 60	17.50	16.00	13.50	

Double Thick.—Discount 45 to 50 %.

SIZES.	1st.	2d.	3d.	4th.
6 x 8 to 10 x 15	$8.25	$7.75	$7.50	$7.00
11 x 14 to 16 x 24	10.00	9.50	8.75	8.25
18 x 22 to 20 x 30	12.75	11.75	10.75	
15 x 36 to 24 x 30	14.25	13.25	12.25	
26 x 28 to 24 x 36	15.75	14.75	13.00	
26 x 36 to 26 x 44	16.25	15.75	14.00	
26 x 46 to 30 x 50	17.50	16.75	14.25	
30 x 52 to 30 x 54	18.50	17.25	15.00	
30 x 56 to 34 x 56	19.50	18.25	16.00	
34 x 58 to 34 x 60	19.50	17.25	18.00	
36 x 60 to 40 x 60	22.00	21.00	20.00	

An additional 10 per cent. will be charged for all Glass more than 40 inches wide. Any size over 50 inches in length, and not making more than 81 united inches will be charged in the 81 united inches bracket.

Steel.

THE EDGAR THOMSON STEEL CO., LIMITED.

MANUFACTURERS OF

General Office and Works at Bessemer Station (Penn. R. R.), Allegheny County, Pa.

New York Office, 57 Broadway.

The Company warrants its rails equal in quality to any manufactured in the United States.

Branch Office and P. O. Address, No. 48 Fifth Ave., Pittsburgh, Pa.

THOS. M. CARNEGIE, Chairman. D. A. STEWART, Sec'y and Treas.

North Chicago Rolling Mill Co.

ESTABLISHED 1857. CAPITAL, $3,000,000. INCORPORATED 1869.

Works at Chicago, Ill., and Milwaukee, Wis.

MANUFACTURERS OF

MERCHANT BAR, FISH PLATES, PIG METAL, IRON RAILS & BESSEMER STEEL RAILS.

CAPACITY OF WORKS.		
	Fish Plates	20,000 tons.
	Merchant Bar	40,000 "
	Pig Metal	80,000 "
	Iron Rails	80,000 "
	Steel Rails	60,000 "
	Total Capacity per year	280,000 "

OFFICES:
17 Metropolitan Block, Chicago, Ill.
57 Mitchell Block, Milwaukee, Wis.

O. W. POTTER, President, CHICAGO.
S. P. BURT, Vice-President, NEW BEDFORD.
S. CLEMENT, Treasurer, MILWAUKEE.
R. C. HANNAH, Secretary, CHICAGO.

C. P. MOORMAN, Prest. J. MORGAN COLEMAN, V. Prest. L. G. QUIGLEY, Sec. and Treas.

COLEMAN ROLLING MILL CO.,

Lessees Louisville Rolling Mill,

MANUFACTURERS OF

BAR, BAND & SHEET IRON

T and Tram Railroad Iron, 10 lbs. to 40 lbs. per yard, and

DEAN & COLEMAN PATENT RAIL.

Office, No. 45 W. Main St., Mill Brook St., LOUISVILLE, KY.

PERIN & GAFF MFG. CO.,

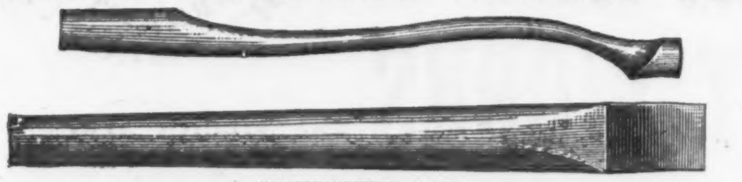
MANUFACTURERS OF

**FLUTING MACHINES,
CAST BUTT HINGES,
STRAP AND T HINGES,
PICKS AND MATTOCKS,
SLEDGE HAMMERS,
FURNITURE CASTERS,
SAD IRONS,
MOLASSES GATES,
PIANO STOOLS, &c.**

CINCINNATI, OHIO.

HUNDLEY & HANKS,
PROPRIETORS OF

NORTH CAROLINA HANDLE CO.



MANUFACTURERS OF

Handles and Spokes,

79 Reade Street and 97 Chambers Street, - - - - NEW YORK.

HARDWARE COMMISSION MERCHANTS.

HEKTOGRAPH

A New Method of Multiplying Copies of Writings, Plans, Drawings, Music, &c., without Press, Acid or Water. 100 Impressions from one Original in Twenty Minutes.

Patents for this valuable process have been issued to us, dated May 18 and June 1, 1880, therefore from his time forth the Hektograph is the only Gelatine Copying Pad that can be used without the maker and user being liable to prosecution for damages, and we warn all parties that we intend protecting our rights to the full extent of the law. The largest plans and drawings can be copied to perfection, making it invaluable to architects and builders.

We can refer to Messrs. Field & Son, 12 Wall St., N. Y.; Geo. B. Post, Esq., 5 Cortlandt St., N. Y.; also, Bush Hill Iron Works and Messrs. W. C. Allison & Sons, Philadelphia.

HEKTOGRAPH CO., 22 and 24 Church St., New York.

Philadelphia Smelting Co.,

S. E. Cor. Twelfth and Noble Sts., PHILADELPHIA.

GENUINE BABBITT,

Guaranteed at a speed of 10,000 a minute, and at any pressure for 10 years.

DEOXIDIZED BRONZE.

Superior to Phosphor Bronze or any other alloy of Copper and Tin for Machinery Journals.

PHILADELPHIA, October 4, 1879.

PHILADELPHIA SMELTING COMPANY, City.—GENTLEMEN: After a trial of eighteen months of your "Deoxidized Bronze" as journal boxes in our rolling mill, where great pressure is required, we take pleasure in recommending it as being superior to any we have heretofore used.

Very truly, HENRY DISSTON & SONS.

WIRE NAILS

French Points, Window Shade Nails,

Upholstering, WAGON NAILS, Molding Nails,

(Sample Cards sent on application.)

Electrotype, Roofing Nails,

Barbed Caster Nails.

Veneer Nails, Label Tacks and small Nails of all kinds, Cabinet Nails, Barbed Lock Nails, Cigar Box Nails, &c., &c., put up in bulk, 5 lb. packages, 1 lb papers, or as wanted.

AMERICAN WIRE NAIL CO.

Factory, Fifteenth and Madison Sts. - - - - - - COVINGTON, KY.

ESTABLISHED IN 1859.

THE IRONMONGER AND METAL TRADES ADVERTISER

PUBLISHED EVERY SATURDAY.

THE OLDEST AND CHIEF REPRESENTATIVE OF THE IRON, HARDWARE AND METAL TRADES.

OFFICE: 44a CANNON STREET, LONDON, E. C.

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PHILADELPHIA OFFICE: 220 South Fourth Street—THOMAS HOBSON Manager.

CINCINNATI OFFICE: Builders' Exchange—T. T. MOORE Manager.

SOUTHERN OFFICE: Cor. Eighth and Market Streets, Chattanooga, Tenn.—S. B. LOWE, Manager.

SPECIAL FEATURES.

Notes of Novelties.—This is a department of the journal always watched with interest by the trade, as it contains an account, from week to week, of the novelties which manufacturers and inventors are introducing to the notice of the trade. These articles are freely illustrated.

Special Correspondents.—The *Ironmonger* has a deserved reputation for its special correspondence from all the principal Continental, British and manufacturing centers. The writers are gentlemen holding important positions in the districts with which they are connected, and possess facilities for acquiring information specially suited for the columns of the *Ironmonger* ***The Week, Legal News, Trade Notes, Bankruptcies, Foreign Notes, Colonial Jottings, Merchants' Circulars, &c.***, are each departments of the journal, containing a digest of all matters of direct interest to the Iron, Hardware and Metal Trades. In addition to the above, there is a carefully classified list of Patents, together with Editorial Notes, French, Belgian and other Special Correspondence.

SUBSCRIPTIONS

to the *Ironmonger and Metal Trades' Advertiser*, with which is sent every fourth week the Foreign Supplement (see below), may commence from any date, but are not received for less than a year complete. The rate is $5 per annum, inclusive of postage to any part of the world outside Great Britain. To every subscriber is presented, free, in the course of his year, a handsome and useful ***Ironmongers' Diary and Text Book,*** a work sold to non-subscribers at 75 cents.

ADVERTISEMENTS

are inserted in the *Ironmonger and Metal Trades Advertiser* at the subjoined rates, from which no variation can be made on any ground whatever:

Size of Page—Nine Inches Deep by Six Inches Wide.

One Advertisement of every Series of 13 Monthly, 27 Fortnightly, or 53 Weekly, will be inserted in the Ironmongers' Diary and Text Book, published toward the end of each year, and presented to every Subscriber.

	53 INSERTIONS, each net.	27 INSERTIONS, each net.	13 INSERTIONS, each net.	7 INSERTIONS, each net.	3 INSERTIONS, each net.	2 INSERTIONS, each net.	1 INSERTION, net.
	Gold.	Gold.	Gold.	Gold.	Gold.	Gold.	Gold.
One page	$17.50	$18.75	$20.00	$22.50	$25.00	$30.00	$35.00
Two-thirds page	13.15	14.10	15.00	16.00	18.75	22.50	26.25
Half page	9.75	10.25	11.00	12.40	13.75	16.50	19.25
One-third page	7.00	7.50	8.00	9.00	10.00	12.00	14.00
Quarter page	5.60	6.00	6.40	7.25	8.00	9.60	11.20
One-sixth page	3.95	4.25	4.50	5.10	5.65	6.75	7.75
One-eighth page	3.15	3.40	3.60	4.10	4.50	5.40	6.35
One-sixteenth page	1.75	1.90	2.00	2.25	2.50	3.00	3.50

SPECIAL ISSUES.

In the spring and autumn of each year there is published a Special Issue, the circulation of which is not less than **Twelve Thousand (12,000)** copies.

THE IRONMONGERS' DIARY AND TEXT BOOK.

This is an annual, **presented free to every Subscriber to the IRONMONGER AND METAL TRADES' ADVERTISER.** It contains a large number of ruled skeleton pages for diary and other entries, and in addition much useful reference information, varied from year to year. It is handsomely bound in cloth, gilt; and as copies are used in thousands of establishments for a whole year, it is obviously a medium of exceptional value for advertisements. Sold to non-subscribers at 75 cents.

THE FOREIGN SUPPLEMENT

is published every fourth week in connection with the extensive and world-wide circulation of the *Ironmonger* itself. The dates of its publication for the next twelve months will be as follows:

OCTOBER 16, NOVEMBER 13, DECEMBER 11, JANUARY 8, 1881, FEBRUARY 5, MARCH 5, APRIL 2 and 30, MAY 28, JUNE 25, JULY 23, AUGUST 20, SEPTEMBER 17.

This Supplement is published in

FIVE LEADING COMMERCIAL LANGUAGES

of the world, including English, and is sent to all the countries where they are spoken, thus placing the contents of the *Ironmonger* not only within reach but in the native language of eighty millions of *German*, forty-two millions of *French*, twenty-eight millions of *Italian*, and fifty-one millions of *Spanish* speaking people; or, in all, over two hundred millions of inhabitants in the principal nations where the best purchasers of manufactured goods are to be found.

Advertisements are inserted in *any* language at the following

MODERATE TARIFF.

Size of Page—13¼ Inches Deep by 9½ Inches Wide.

	13 INSERTIONS, each net.	7 INSERTIONS, each net.	3 INSERTIONS, each net.
	Gold.	Gold.	Gold.
One page	$30.00	$33.75	$37.50
Two-thirds page	22.00	24.75	27.50
Half page	17.00	19.15	21.25
One-third page	12.50	14.10	15.65
Quarter page	$10.00	$11.25	$12.50
One-sixth page	7.50	8.45	9.40
One-eighth page	6.20	7.00	7.75
One-sixteenth page	3.20	3.40	4.00

Advertisers will do well to use Illustrations freely. Where economy of space is an object, a left page illustrated and described in one language can be suitably described in four or more languages on the opposite or right page without illustrating.

THE WHOLE FOREIGN HARDWARE TRADE,

so far as our experience of twenty years is concerned, will be covered by THE FOREIGN SUPPLEMENT at least twice a year. Thus a Price List or Advertisement inserted in the *Ironmonger* and FOREIGN SUPPLEMENT is a strikingly powerful and most efficient way of publicity not to be compared with any of the other ordinary channels of communication.

B. KREISCHER & SONS,
FIRE BRICK.
BEST AND CHEAPEST.
Established 1845.
Office, foot of Houston Street, East River,
NEW YORK.

NEWTON & CO.,
ALBANY, N. Y., Manufacturers of
FIRE BRICK
Stove Linings,
Range and Heater Linings
Cylinder Brick, &c., &c.

M. D. Valentine & Bro
Manufacturers of
FIRE BRICK
And Furnace Blocks
DRAIN PIPE & LAND TILE.
Woodbridge. - - - N. J.

BORGNER & O'BRIEN,
Manufacturers
FIRE BRICK
AND
Edge Pressed Furnace Blocks,
CLAY RETORTS, TILES, &c.,
Twenty-third Street,
Above Race, *PHILADELPHIA.*
Twenty years' practical Experience.

PERTH AMBOY TERRA COTTA CO.,
Successors to
A. HALL & SONS, Perth Amboy, N. J.,
ARCHITECTURAL TERRA COTTA
AND
FIRE BRICK.
170 Broadway, NEW YORK.

BROOKLYN
Clay Retort and Fire Brick Works,
(EDWARD D. WHITE & CO.)
Manufacturers of Clay Retorts, Fire Brick, Gas House and other Tile.
VAN DYKE, ELIZABETH, RICHARDS & PARTITION STS.
Office, 88 Van Dyke St., Brooklyn, N. Y.

Watson Fire Brick Manufactory,
ESTABLISHED 1836.
JOHN R. WATSON, Perth Amboy, New Jersey.
Manufacturer of
FIRE BRICK,
For Rolling Mills Blast Furnaces, Foundries, Gas Works, Lime Kilns, Tanneries, Boiler and Grate Setting, Glass Works, &c.
Fire Clays, Fire Sand, and Kaolin for Sale.

HENRY MAURER,
Proprietor of the
Excelsior Fire Brick & Clay Retort Works,
Manufacturer of FIRE BRICK, HOLLOW BRICK AND CLAY RETORTS.
WORKS: PERTH AMBOY, NEW JERSEY.
Office & Depot, 418 to 422 East 23d St., N. Y.

TROY FIRE BRICK WORKS,
Troy, N. Y.,
JAMES OSTRANDER & SON,
ESTABLISHED 1848,
Manufacturers of
FIRE BRICK,
Tuyeres, Tiles, Blast Furnace Blocks, &c. Miners and Dealers in Woodbridge Fire Clay and Sand, and Staten Island Kaolin.

Established 1864.
GARDNER BROTHERS,
Manufacturers of
STANDARD SAVAGE FIRE BRICK, TILE & FURNACE BLOCKS,
OF ALL SHAPES AND SIZES.
Clay Gas Retorts and Retort Settings, and Miners and Shippers of Fire Clay.
OFFICE: 116 Smithfield St., Pittsburgh, Pa.
WORKS: Mt. Savage Junction, Md., and Lockport, Pa.

HALL & SONS,
FIRE BRICK,
Buffalo, N. Y.

The Buckeye Upright Drill Press
Is the cheapest and best made. Price, $15 Weighs 65 pounds. Discount to the trade. Send for circular to
A. E. Folger & Co.,
Springfield, O.

Watchman's Improved Time Detector, with Safety Lock Attachment.
Patented 1875-6-7.

Beware of infringements. This instrument is supplied with 12 keys for 12 different stations. Invaluable for all concerns employing night watchmen. Send for circulars to
E. IMHAUSER,
212 Broadway, N. Y.
P. O. Box 2875.

HENRY DISSTON & SONS,
KEYSTONE SAW, TOOL, STEEL & FILE WORKS,
TRADE MARK
Front & Laurel Sts., PHILADELPHIA.

Great American One-Man Cross-Cut Saw,
With Supplementary Handle.
PATENTED JUNE 27, 1876, OCTOBER 4, 1870.

The above cut represents our new and improved method of changing the extra handle to either end, thus making a One-Man Saw so it can be operated by two men if desired. The extra handle can be placed at any distance from the regular handle, as shown in the cut, thus suiting the option of the operator. The **"Great American"** One-Man Cross-Cut Saws are made and ground on the same principle as our No. 7 Hand Saws. We have lately improved the file for keeping this tooth in order, and it should be ordered with saws.

UNION HARDWARE CO., New Patent Roller Skate.

TO THE HARDWARE TRADE OF THE UNITED STATES: This Skate is constructed of the finest material and in the best manner for durability and ease of action. The cramping mechanism, operated by tilting the foot stock, fits it especially for rink use, where grace of movement is sought for in the highest training of scientific skating. It is admirably adapted for out-door use on concrete sidewalks, streets and squares now in extensive use throughout the country. All parts and pieces belonging to the respective sizes are made interchangeable so that the rink proprietor may readily replace any part or piece that may be broken or lost.
Sizes—7½, 8, 8½, 9, 9½, 10, 10½, 11, 11½, 12 inches.
With Polished Beech Wood Tops, Trimmed with Leather Straps, as shown in cut.......Price per pair, $5.00
With Steel Tops Blued and Clamp Fastening .... " 6.00

PATENTED
May 16, 1876.
August 1, 1876.
Sept. 5, 1876.
October 10, 1876.

THE UNION HARDWARE CO., with Coulter, Flagler & Co.
87 CHAMBERS ST. and 69 READE ST., NEW YORK.

COLEMAN EAGLE BOLT WORKS
ESTABLISHED 1845.
WELSH & LEA.
NORWAY IRON CARRIAGE & TIRE BOLTS,
AXLE CLIPS, &c.
Highest and only Awards and Medals, Philadelphia, 1876, and Paris, 1878.
WORKS, Columbia Avenue, Hancock and Mascher Streets.
OFFICE, 145 Columbia Avenue (late 2030 Arch St.)
PHILADELPHIA, U. S. A.

CHAMPION ONE-MAN SAW

WITH PATENT ADJUSTABLE ATTACHMENT. The only Saw that can be adjusted for either a One-Man or a Two-Man Saw. We make the following lengths, 3½, 4, 4½, 5 feet. Send for sample.
WHEELER, MADDEN & CLEMSON MFG. CO., Middletown, N. Y.

John T. Lewis & Bros.
No. 231 South Front St.,
PHILADELPHIA.
JOHN T. LEWIS & BROS. WARRANTED PURE WHITE LEAD. PHILADA.
TRADE MARK.
MANUFACTURERS OF
Pure White Lead, Red Lead, Litharge, Orange Mineral, Linseed Oil,
AND PAINTERS' COLORS.

Brooklyn White Lead Co.
BROOKLYN WHITE LEAD CO. INCORPORATED 1825. SUPERIOR PURITY, DURABILITY AND COLOR.
TRADE MARK
White Lead, Red Lead & Litharge.
No. 182 Front Street,
NEW YORK.

JOHN JEWETT & SONS,
Manufacturers of the well-known brand of
WHITE LEAD.
JEWETT & SONS' PERFECTLY PURE WHITE LEAD.
TRADE MARK.
ALSO MANUFACTURERS OF
LINSEED OIL.
182 Front Street, NEW YORK.

ATLANTIC WHITE LEAD. PURE. WARRANTED ROBERT COLGATE & CO.
TRADE MARK.
The Atlantic White Lead and Linseed Oil Co.,
MANUFACTURERS OF
White Lead (Atlantic), Red Lead, Litharge & Linseed Oil.
ROBERT COLGATE & CO.,
287 Pearl Street, New York.

DUNBAR BROS.,
Manufacturers of
Clock Springs and Small Springs
of every description, from best Cast Steel,
BRISTOL, CONN.

W. & J. TIEBOUT,
Manufacturers of
Brass, Galvanized & Ship Chandlery Hardware,
No. 33 Chambers St., New York.

THOMAS MORTON,
65 Elizabeth Street, New York,
Manufacturer of Copper and Iron
SASH CHAINS,
With Patent Attachments.
Warranted for years. Chains of any size made to order, and trade supplied with liberal discount.

PHILADELPHIA.

(Corrected Weekly by Lloyd, Supplee & Walton.)

Terms, 30 days. For 60 or 90 days, interest added at 10 per cent. per annum.

Anvils.
Peter Wrights, ₩ ℔ ... 10½c
Over 250 lbs ... 11c
Eagle (American) ... 10c ₩ ℔—dis 20 %

Apple Parers.
Keystone Centennial, 1875 ... $4.25
" 1877 ... 5.00
Reading No. 72 ... 5.00
" No. 74 ... 6.00
" No. 75 ... 7.00
" No. 78 ... 7.50
Rotary Peach Parers ... 13.40
Lots of 10 to 25 dozen special prices.

Axes.
Hunt's Kentucky and Yankee ... per doz $11.00
Mann's Red Warrior ... 11.00
Richland Chief ... 10.00
Beveled Axes ... add 50c " net
Double Bit Axes ... 22.00

Augers and Auger Bits.—New List January 1.
Bates' Nut Augers ... dis 40 %
Cook's Augers ... dis 40&10 %
Watrous' Ship Augers ... dis 15 %
Benjamin Pierce Auger Bits ... dis 35 %
Griswold Auger Bits ... dis 40 %
Cook's " ... dis 40&10 %
Jennings' " ... dis 10, 10&10 %
Bonney's Pat. Hol. Augers, list $48 ₩ doz ... dis 25&10 %
Stearns' Pat. Hol. Augers, list $48 ₩ doz ... dis 20&10

Balances.
Light and Common ... dis 10&10 %

Bells.
Bevin Bros. Mfg. Co. Light Hand Bells ... dis 60&10 %
Swiss Pattern Hand Bells ... low list dis 40&10 %
Connell's Door Bells ... dis 35 %
Gt. Western & Kentucky Cow, new list ... dis 50 %

Bolt and Rivet Clippers.
Chambers' No. 1, for ⅜ bolt ... each, $7.50
" No. 2, " ... 9.00 } dis 15 %
" No. 3, " ... 12.00

Boring Machines.
Upright, without Augers ... List 5.50 } dis 40 %
Angular, without Augers ... 6.75

Bolts.—Eastern Carriage Bolts ... dis 80 %
Philadelphia ... new list dis 60&10 %
Stanley, Wrought Shutter ... dis 50&10 %

Braces.—Barber's ... dis 40&5 %
Backus ... dis 60 %
Spofford ... 50&5 %
American Ball ... dis 40&10 %

Butts.—Cast Fast Joint, Narrow ... dis 40&10 %
" " Broad ... dis 40&10 %
Cast Loose Joint, Narrow ... dis 40&10 %
" " Broad ... dis 50&10 %
" Acorn, Loose Pin ... dis 50&10 %
" " Jap'd ... dis 55&10 %
Mayer's Loose Joint ... dis 55&10 %
Wrought Loose Pin ... dis 50&10 %
" Table Hinges and Back Flaps ... dis 40&10 %
" Narrow, Fast ... dis 40&10 %
" Loose Joint ... dis 50&10 %

Blind Butts.
Parker ... dis 60, 10&10 %
Clark ... dis 60, 10&10 %
Shepard ... dis 60, 10&10 %
Lull & Porter ... dis 60&10 %
Huffer's ... dis 45 %

Chains.—German Halter and Coil, new list Oct. 22, 1879 ... dis 40 %
Galvanized Pump ... ₩ ℔ 10c net
Best Proof Coil Chain—English.
₩ ℔ ... 11 10 8½ 7½ 7¼ 7 gold
3-16 ¼ 5-16 ⅜ 7-16 ½ in.

Chisels.—Socket Framing ... dis 65&10 %
Socket Firmer ... dis 65&10 %
Butcher's ... $5.00 to 8 gold

Casters.—Bed (new list July 1, 1880) ... dis 25&10 %
Plate ... dis 25&10 %

Coffee Mills.—Box and Side, new list Jan. 1, 1880 ... dis 35 %
Enterprise ... dis 20 %

Cutlery.—Walden Pocket ... new list net
Landers, Frary & Clark, J. Russell & Co., Lamson & Goodnow Mfg. Co. and Meriden Cutlery Co., Manufacturers' prices net.

Drawing Knives.
Hart Mfg. Co.'s ... dis 65&10 %
Adjustable Handle ... dis 15 %

Fry Pans.
Tinned ... dis 45 %
₩ doz. $3.50 4.00 4.50 5.00 5.50 6.50 7.50 9.00 10.00
No. 0 1 2 3 4 5 6 7 8
Burnished ... dis 55 %
₩ doz. $3.00 3.75 4.25 4.75 5.25 6.00 7.00 8.00 9.00
No. 0 1 2 3 4 5 6 7 8

Files.
Nicholson ... dis 30 %
Disston ... dis 30 %
Butcher ... $4.50 £
Spencer ... $4.50 @ 4.75 £

Fluting Machines.
Eagle—3½ in. roll ... each, $2.25 } dis 10 %
" 4½ in. roll ... " 2.85
Crown—3½ in. roll ... 3.50
" 4½ in. roll ... 4.00 } dis 10 %
" 8 in. roll ... 5.00
Geneva Fluter ... dis 20 %
Favorite com Fluter & Sad Iron ... ₩ doz $10.50 net

Hammers.
Yerkes & Plumb's, new list ... dis 30 %

Hatchets.
Yerkes & Plumb, new list ... dis 30 %
Hunt ... dis 15&5 %

Hinges.
Strap and T ... dis 45&10 %

Horse Nails. Nos. 6 7 8 9 10
Ausable ... 30 27 [illegible] 23 22
" Pol'ed & Pt'd and Blued and Polished ... [illegible] 24 23
Globe ... New list ... [illegible] 21 20
Clinton ... [illegible] 18 17
" Polished & Pointed ... [illegible] 19 18
Porter, all sizes ... ₩ ℔ 15c. net
Discount on Ausable and Clinton, 20 %; Globe, 10 %

Locks and Knobs.
Branford ... dis 40&2 %
Gaylord Cabinet ... dis 40&2 % cash
American Padlocks ... dis 40&2 % cash
Scandinavian Padlocks ... dis 50 %
₩ doz. ... $5.00 6.00 6.50 7.50 8.50 10.20 12.50 } dis 60 %
₩ doz. ... $18.00 26.00 33.00 } dis 60 %

Lanterns.
Nail City ... ₩ doz, $9.00 net
Square Candle and Oil ... ₩ doz net
Tubular ... No. 0, $8.65; No. 1, $10.15 ₩ doz net
Globes, 25 cents extra per doz. net.

Lawn Mowers.—Pennsylvania ... dis 30&10 %
Philadelphia ... dis 30&10 %
Excelsior ... dis 30&10 %

Lawn and Garden Pumps.
Holland Patent ... List $5.00 dis 10 %

Mattocks.
Long and Short Cutter ... new list
Pennsylvania Pattern ... per doz

Molasses Gates.
Enterprise Mfg. Co.'s Measuring Faucets ... dis 20 %
Stebbins' Gates ... dis 50&10 %
Lincoln's ... dis 50&10 %
Landers, Frary & Clark's Petroleum ... dis 20&10 %
Brass Liquor Cocks, new list Jan. 1, 1880 ... dis 40 %
Cork Lined ... dis 70 %

Meat Cutters.—Pennsylvania Meat Cutter ... dis 50 %
Dixon's ... dis 30 %
Woodruff ... dis 30 %
Stowe ... dis 30 %
Hale's ... new list, dis 20, 2&10 cash
American ... dis 25 %
Stuffers ... dis 25 %
Enterprise Stuffers ... dis 20 %

Planes.—Ohio Tool Co. ... dis 25 %
Sciota ... dis 30 % } % cash
Auburn ... dis 30 % } in 10 days
New York Tool Co. ... dis 30 %
Bailey ... dis 20&10 %

Plane Irons.—Ohio Tool Co. ... dis 10&5 %
Butcher's ... £, $5.50

Plumbs and Levels.
Stanley's Adjustable ... dis 60&10 %
" Non-Adjustable ... dis 60&10 %

Picks.—New list ... dis 10 %

Pumps.—Rickford ... $5.00, dis 60&10 %

Rules.—Stanley Boxwood ... dis 50&10 %
Stanley Ivory ... dis 30&10 %

Steelyards.—Hart's Pattern ... ₩ doz.
₩ doz. ... $14.50 17.75 21.00 26.50 31.00 35.50
Lbs. ... 100 150 200 300 900
American Pattern ... dis 30&10 %
₩ doz. ... $11.50 10.25 13.75 15.60 16.50 19.50
Lbs. ... 60 80 150 300 900

Squares.
Steel and Iron ... dis 40 %; full case, dis 50&10 %
Try Squares, Stanley ... dis 45&10 %
Disston's Try Squares ... dis 33⅓ %

Scythes.—Golden Clipper, Damascus Blade, Boxed and Sharpened ... ₩ doz $9.00 net
Current No. 1, Bronzed Blade, Boxed and Sharpened ... ₩ doz $8.50 net
Clipper No. 5, Painted Red, Boxed and Sharpened ... ₩ doz $8.00 net

Saws.—Disston's Hand, Panel and Rip ... dis 20 %
Disston's Circular ... dis 35 %
" Cross-Cut No. 2, Plain Tooth ... dis 25 %
" " Patent Tooth ... dis 25 %
" " Champion Tooth ... dis 25 %
Boynton's Lightning Cross Cut, new list ... dis 20 %
" One Man, all lengths ... dis 20 %
" Billet Webs, 30 inch ... dis 25 %
" Butcher's Bow Saws, cross bar ... dis 25 %
" Hand, Panel and Rip ... dis 25 %

Shovels and Spades.
Rowland ... dis 40&10 %
Oliver Ames & Sons, new list ... dis 10 %
Griffith ... dis 40&10 %

Sad Irons.—2 to 10 lbs ... ₩ ℔ 3¼c
Mrs. Potts' Patent ... dis 30 %
Dixon's ... ₩ ℔ $2.00 net

Stone.—Arkansas Oil Stone ... ₩ ℔ 27c net
Washita Extra ... 18c
" No. 1 ... 15c
" No. 2 ...
" Slips ... 36c
" Axe ... 18c net
Turkey Oil Stone No. 1 ... ₩ ℔ $1.00 net
Hindostan Oil Stone No. 1 ...
" Axe Stone ...
" Slips ... 0 & 10 %

Screws.
Flat Head Iron ... dis 45 %
" Brass ... dis 35 %
Round Head Brass ... dis 20 %
" Iron ... dis 25 %

Spoons.
Plated ... dis 33⅓&5 %
German Silver ... dis 25&10 %
Britannia, Boardman's ... dis 55 %
" Parker's ... dis 55 %
Tinned ... dis 10 %

Springs.—Torrey ... ₩ doz $2.10 10 %
Philadelphia ... 5 in., $5.00; 8 in., $7.00 ₩ doz. dis 25 %
Chatfield No. 1, $2.75; 2, $3.25; 3, $5.00 ₩ doz, dis 33⅓ %
Gem Coil No. 1, Large Jap'd ... ₩ doz $3.50
" No. 2, Medium Jap'd ... " 2.50 } net
" No. 3, Small Jap'd ... " 2.00

Stocks and Dies. ... dis 10&5 %

Stove Polish.—Gem ... ₩ gross, $4.50, dis 5 %
Dixon ... " 5.75 net
Onyx ... " $4.00 @ 4.25 net

Tacks, Brads, &c. ... dis 20&10 %
Shoe Nails—4-8, 9c; 3½-8, 10c ₩ ℔ ... 10 %
Double Pointed Tacks ... dis 40&5 %

Traps.
Genuine Oneida—Newhouse ... dis 30 %
Im. Oneida—Newhouse list, first qual ... dis 50 %

Vises.—Solid Box, Trenton new list ... dis 25 %

Wrenches.—Agricultural ... dis 60&10 %
Coes' Genuine ... dis 50 %
" " Mechanics' ... dis 50&10 %
" " Mall. Bar ... dis 70 %
Philada. Tool Co., Duplex ... dis

Wire.
Bright or Ann'd, No. 0 to 18 ... dis 45 to 50 %
" No. 19 to 26 ... dis 52½ to 57 %
" No. 27 to 36 ... dis 60 to 65 %
Coppered, 0 to 18 ... dis 40 to 45 %
Tinned Broom Wire ... dis 47½ to 50 %
Galvanized No. 7 to 18 ... Market List, dis 35 to 37½ %

Wringers.
Peerless No. 2½ ... $60.00
" " 2 ... 63.00
Universal, No. 2½ ... 60.00
" " 2 ... 63.00
Novelty, No. 10 ... 60.00
" " 2 ... 63.00

PITTSBURGH.

Merchant Iron.

Terms.—Note or acceptance at 60 days, with current rate of exchange on New York, or a discount of 2 per cent. for cash, if remitted within 10 days from date of invoice.

Flat Bar.
1¼ to 4 by ⅜ to 1 inch ... 2.5c
4¼ to 6 by ⅜ to 1 " ... 2.6c
1⅛ to 6 by 1⅛ to 1½ " ... 2.9c
1¼ and 1⅛ by ⅜ to ⅜ " ... 2.6c
1 and 1⅛ by ⅜ to ⅜ " ... 2.7c
⅝, ¾ and ⅞ by ⅜ to ⅜ inch ... 2.9c

Rounds and Squares.

1 to 1⅞	2.5c	⅝ to 9-16	2.7c
2 to 2⅝	2.7c	½ to 7-16	2.9c
2¾ to 3¼	3.0c	⅜	3.1c
3⅜ to 4	3.5c	5-16	3.3c
4¼ to 5	4.0c	¼	3.4c
⅝ to ⅞	2.6c	3-16	5.5c

Oval Iron.

⅞ to 1⅜	2.9c	½	3.3c
⅝ to ¾	3.1c	⅜	3.7c

Half Oval and Half Round.

⅞ to 1¼ inch	3.2c	½ inch	4.0c
⅝ to ¾ "	3.7c	⅜ "	5.5c

Horse Shoe.
⅝ to 1⅛ by 5-16 to ⅞ inch ... 3.5c

Wagon Box Iron.
⅞ Inch, Nos. 13 and 14 ... 3.7c
⅞ " " 11 and 12 ... 3.5c
¾ " " 13 and 14 ... 4.0c
¾ " " 11 and 12 ... 3.8c
⅝ " " 13 and 14 ... 4.4c
⅝ " " 11 and 12 ... 4.1c

Heavy Bands.
3½ to 6 by ¼ and 5-16 inch ... 2.7c
1⅛ to 3¼ by ¼ and 5-16 " ... 2.7c
1 to 1⅜ by ¼ and 5-16 " ... 2.8c
¾ to ⅞ by ¼ and 5-16 " ... 3.0c
⅝ and ½ by ¼ and 5-16 " ... 3.5c

Light Bands.
1⅛ to 6 by ⅛ to 3-16 ... 3.0c
1⅛ to 6 by Nos. 11 and 12 ... 3.1c
1 to 1⅜ by ⅛ to 3-16 ... 3.1c
1 to 1⅜ by Nos. 11 and 12 ... 3.2c
⅞ and 13-16 by ⅛ to 3-16 ... 3.4c
⅞ and 13-16 by Nos. 11 and 12 ... 3.5c
¾ and 11-16 by ⅛ to 3-16 ... 3.7c
¾ and 11-16 by Nos. 11 and 12 ... 3.8c
⅝ and 9-16 by ⅛ to 3-16 ... 4.0c
⅝ and 9-16 by Nos. 11 and 12 ... 4.1c
½ inch by ⅛ and 3-16 ... 4.3c
½ inch by Nos. 11 and 12 ... 4.4c

Hoop Iron.
1¼ to 4, Nos. 13, 14 and 15 ... 3.3c
1¼ to 2, Nos. 16, 17 and 18 ... 3.4c
1¼ to 2, No. 19 ... 3.5c
1¼ to 2, No. 20 ... 3.6c
1¼ to 2, No. 21 ... 3.7c
1¼ to 2, No. 22 ... 3.8c
15-16, 1, and 1⅛, Nos. 13, 14 and 15 ... 3.5c
15-16, 1, and 1⅛, Nos. 16, 17 and 18 ... 3.6c
15-16, 1, and 1⅛, Nos. 19 and 20 ... 3.7c
15-16, 1, and 1⅛, No. 21 ... 3.8c
15-16, 1, and 1⅛, No. 22 ... 3.9c
⅞, Nos. 13, 14 and 15 ... 3.7c
⅞, Nos. 16, 17 and 18 ... 3.8c
⅞, Nos. 19 and 20 ... 3.9c
⅞, No. 21 ... 4.0c
⅞, No. 22 ... 4.1c
13-16, Nos. 13, 14 and 15 ... 3.9c
13-16, Nos. 16, 17 and 18 ... 4.0c
13-16, Nos. 19 and 20 ... 4.1c
13-16, No. 21 ... 4.2c
13-16, No. 22 ... 4.3c
¾, Nos. 13, 14 and 15 ... 4.0c
¾, Nos. 16, 17 and 18 ... 4.1c
¾, Nos. 19 and 20 ... 4.2c
¾, No. 21 ... 4.3c
¾, No. 22 ... 4.4c
11-16, Nos. 13, 14 and 15 ... 4.2c
11-16, Nos. 16, 17 and 18 ... 4.3c
11-16, Nos. 19 and 20 ... 4.4c
11-16, No. 21 ... 4.5c
11-16, No. 22 ... 4.6c
⅝, Nos. 13, 14 and 15 ... 4.4c
⅝, Nos. 16, 17 and 18 ... 4.5c
⅝, Nos. 19 and 20 ... 4.6c
⅝, No. 21 ... 4.7c
⅝, No. 22 ... 4.8c
⅝, No. 23 ... 4.9c
9-16, Nos. 13, 14 and 15 ... 4.6c
9-16, Nos. 16, 17 and 18 ... 4.7c
9-16, Nos. 19 and 20 ... 4.8c
9-16, No. 21 ... 4.9c
9-16, No. 22 ... 5.0c
9-16, No. 23 ... 5.1c
½ inch, Nos. 13, 14 and 15 ... 4.8c
½ " Nos. 16, 17 and 18 ... 4.9c
½ " Nos. 19 and 20 ... 5.1c
½ " No. 21 ... 5.2c
½ " No. 22 ... 5.3c
½ " No. 23 ... 5.4c

The prices under Hoop Iron do not apply to Cotton Ties.

1-10c per lb. extra will be charged for each gauge lighter than the lightest indicated.

1-10c per lb. extra will be charged for cutting Hoops to specified lengths.

Barrel Hoops.
1¼ to 2 in., cut to length.
9 to 11 lbs, per set of 6 hoops ... 3.5c
8 lbs. and less than 9 lbs. per set of 6 hoops ... 3.6c
Less than lbs. per set of 6 hoops ... 3.8c

Extras for Cutting to Length all Preceding Iron.
All Iron, including Tire ... 1.10c

Tank Iron.
No. 9 and heavier ... 3.3c
Plow Slabs ... 3.5c
" Wings ... 3.8c

Sheet Iron.

	Common.	Charcoal.	Juniata.
No. 10 to 14	3.5c	5.0c	6.5c
No. 15 to 17	3.8c	5.3c	6.8c
No. 18 to 21	4.1c	5.6c	7.1c
No. 22 to 24	4.3c	5.8c	7.3c
No. 25 & 26	4.5c	6.0c	7.5c
No. 27	4.7c	6.2c	7.7c
No. 28	5.1c	6.6c	8.1c

All sheets No. 18 and lighter, over 30 inches wide, not less than 2.10c extra.

Wood's Patent Planished Sheet.
1st quality (A) ... 12c | 2d quality (B) ... 10½c

Galvanized Iron—Juniata.

Nos. 14 to 20	12c	No. 27	15c
Nos. 21 to 24	13c	No. 28	16c
Nos. 25 and 26	14c	No. 29	18c

Current discount to jobbers, 1st quality, 27½ %; 2d quality, 37½ %.

Coal Screen Iron.
4½ by ⅝ by 5-16 ... 2.0c | 1 by ⅝ by 5-16 ... 3.5c

Angle Iron.
2½, 3, 3½ and 4 inch ... 3.3c
1½, 1¾, 2 and 2¼ inch ... 3.3c
1¼ inch ... 3.4c
1 " ... 3.6c
1⅛ by 1 inch, for Plow Handles ... 3.8c
1⅛ by ⅞ " " " ... 3.8c
1⅜ by ⅝ " " " ... 3.9c

T Rail.

8 lbs. to the yard	2.9c	20 lbs. to the yard	2.9c
12 " "	2.9c	28 " "	2.9c
16 " "	2.9c	40 " "	2.9c

Splice Joints for 12, 16 and 20-lb. Rail, 40c each; 28 and 30-lb. Rail, 50c each; 40 lb., 60c each.
3½ by ⅝ and ½ Spikes for 20 and 28-lb. Rail ... 4½c
2½ and 3 by ⅜ " " 12 and 16-lb. " ... 4¾c
2¼ by 5-16 " " 8-lb. Rail ... 5½c

Flat Rails.—Punched and Countersunk.
1⅛ to 2 by ½ to ⅝ inch ... 3.0c
1⅛ by ⅜ and 7-16 inch ... 3.2c
1⅛ by ⅜, 7-16 and ½ inch ... 3.5c

Juniata Nail Rods ... 6.50
Norway " ... 8.00
Guard Iron, ¼x⅜x⅜ and ⅜x⅜x⅜ ... 4.00
" ⅜x⅜x9-16 and ⅜x⅜x⅜ ... 4.30
Drag Bars ... 3.30
Dropper Bars ... 3.30
Cylinder and Landside Iron ... 3.30
Plow Beam Iron ... 3.30

Nails.
10d to 60d ... $3.00

Best Quality Refined Cast Steel.
Square, Flat, Octagon and Round.
⅜ to 2 inches, inclusive ... 13 c
5-16 and 2⅛ to 3 inches ... 14 c
¼ and 3⅛ to 4 " ... 15 c
7-32 and 4⅛ to 5 " ... 16 c
3-16 and 5⅛ to 6 " ... 19 c
5-32 inch ... 23 c
⅛ inch ... 31 c
Oil Well Steel Forgings ... 21½c
No grade of Crucible Tool Steel shall be sold for less than above prices.

Machinery Steel.

	Crucible.	Bessemer & Open Hearth.
Ordinary Sizes, ⅜ to 2 inch Round	7½c	6c
5-16 and 2⅛ to 3 inches	8½c	7c
¼ and 3⅛ to 6 "	9½c	8c
7-32 inch	10½c	9c
3-16 "	12½c	11c

Square, Flat and Octagon, ½c extra throughout the list.
Cut to specified lengths, ½c extra.

Hammer Cast Steel.
2 inches and under ... 8½c
Above 2 inches ... 9½c

Sheet Steel.—Crucible.

	Best.	2d Qual.	3d Qual.	Bessemer & Open Hearth.
To 21 gauge	13c	11c	9c	6½c

1c. extra for each additional gauge.
Cut to multiples or specified lengths, ½c. extra.

Miscellaneous Cast Steel.
Auger and Auger Bit ... 8½c
Axle Steel for carriages and wagons ... 8½c
Frog Points and Plates ... 10c
" Side Bars ... 8c
Pick, plain ... 9c
" and Mattock, beveled ... 9c
Skate Steel ... 8½c
Table Cutlery ... 9c
Pike and Cant Hook ... 9c
Coal and Granite Wedge ... 9c
Roller ... 7½c
Spindle, subject to Machinery classification ... 8½c
Trap Spring Steel ... 9½c
Forged Crank Pins and Lathe Spindles ... 10½c
Piston Rods, plain ... 8c
" forged to shapes ... 10½c
Slide Bars, plain ... 8c
" forged to shapes ... 10½c

Crucible, Open Hearth or Bessemer.
Boiler, Fire-Box and Flue Sheets, not less than 3-16 thick ...
Boiler, Fire-Box and Flue Sheets, not less than ⅛ thick ...
Circulars and semi-circulars, when ordered separately ...
Smoke Stack, to shape ...
Locomotive Tank Steel ...

File Cast Steel.
Square, Round, Half Round and Flat Bastard, 8-inch and over ... 9c
Mill Saw, 8-inch and over ... 9½c
Taper, 3½-inch and over ... 10½c
Horse and Shoe Rasp ... 9½c

Spring Cast Steel ... 7½c
Spiral and Taper, cut to lengths ... 8c

Tire Cast Steel.
1x½ and over ... 8c
1x3-16, ⅞x3-16 and ¼ ... 8½c
1 and 13-16x⅛ and 5-32, ¾x3-16 and 5-32 ... 9c
¾ and ⅝x⅛ and 3-32 and 12 g ... 9½c
Solid Safe Cast Steel ... 7½c

Agricultural Implement Cast Steel.
Fork and Rake, Crucible ... 8½c
Horse Rake Steel, cut to lengths, Crucible ... 9 c
Hoe, Crucible ... 8 c
Corn Stalk Cutter, beveled ... 9 c
Beveled Hoe and Shovel Steel in Bars ... 9 c
Crucible Plow Steel in slabs ... 8½c

Bessemer and Open Hearth.
Spring ... 5½c
" spiral and taper, cut to lengths ... 6½c
Tire, 3-16 thick and above ... 5½c
Toe Calk ... 5½c
Plow ... 5½c
Axle Billets ... 5c
Sleigh Shoe ... 5c
Cutter Shoe, cut to lengths and tapered ... 6½c
Scythe Back Steel ... 5c
Grain Drill Bars ... 8½c
" Points ... 9½c
Rolling Coulter Blanks, cut and punched ... 10½c
Thrasher Steel ... 5½c
" Teeth ... 6½c
Rolled Hammer Billets ... 5½c
Where Bessemer or Open-hearth Steel can be used in place of Crucible, the difference in price shall not be greater than 1c. per lb., except where especially provided in the list.
Terms.—Four months; 3 per cent. discount for cash, if remitted within 30 days.

Rolls and Castings.
Furnace, Floor and Straightening Plates ... 2½c
Housings and Castings not otherwise specified ... 3 c
Guide Plates ... 3½c
Spindles and coupling boxes ... 3 c
Sand Rolls and Pinions, large size ... 3 c
" " small size ... 3½c
Pipe Mill Castings ... 3½c
Rolling Mill Castings under 50 lbs ... 5 c
Spur and Bevel Wheels, large ... 4 c
" " small ... 3¾c
Pulleys up to 30 inches ... 4½c
" over 30 inches ... 4¾c
Engine Castings, light ... 4½c
" " heavy ... 4 c

Chilled Rolls.
6 to 7 in. diam., 7 to 20 in. long ... 5½c
8 to 15 in. " 8 to 40 in. " ... 5½c
15 to 24 in. " 15 to 72 in. " ... 5 c
14 to 31 in. " 72 to 108 in. " ... 5 c

White and Red Lead.
Strictly Pure White Lead in Oil, in kegs, in lots of 500 ℔ and over, 9c; less than 500 ℔, 9½c; in 25 and 50 ℔ Tin Pails, ½c. ₩ ℔ over keg price; 12½ ℔ Tin Pails, 1c ₩ ℔ over keg price; assorted, 1 to 5 ℔, 100 ℔ Cases, 12c.
Dry White Lead..less than 500 lbs.. 8¾c; over 500 lbs. 8¼c
Orange Mineral, genuine, in kegs, 10c; in barrels, 9 c
Red Lead, very brilliant, " 8c; " 7½c
Litharge (Potter's Lead) " 8c; " 7½c
Freights equalized with all points.
Terms: Note at sixty days, or if paid within 15 days from date of invoice, a discount of 1½ per cent. will be allowed, but not otherwise.

Window Glass.
Per Box of 50 Feet.—Discount 50&10 % on single strength, 60&10 % on double.

Single Strength.

Size.	AA.	A.	B.	C.
6 x 8 to 10 x 15	$8.25	$7.50	$7.00	$6.50
11 x 14 to 16 x 24	9.25	8.50	8.00	7.25
18 x 22 to 20 x 30	10.75	9.75	8.75	7.75
15 x 36 to 24 x 30	12.25	10.75	9.00	8.50
26 x 28 to 24 x 36	13.00	11.50	9.75	9.00
26 x 36 to 26 x 44	14.50	13.25	10.75	9.50
26 x 46 to 30 x 50	15.00	14.00	11.25	10.50
30 x 52 to 30 x 54	16.00	14.50	12.00	
30 x 56 to 34 x 56	17.25	15.50	13.50	
34 x 58 to 34 x 60	18.25	17.25	15.00	
36 x 60 to 40 x 60	20.75	18.75	17.25	
Double Strength.				
6 x 8 to 10 x 15	12.75	11.75	10.75	10.00
11 x 14 to 16 x 24	14.50	13.25	12.50	11.25
18 x 22 to 20 x 30	17.25	15.75	14.00	
15 x 36 to 24 x 30	19.75	17.25	14.50	
26 x 28 to 24 x 36	21.00	18.50	15.75	
26 x 36 to 26 x 44	23.25	21.25	17.25	
26 x 46 to 30 x 50	24.00	22.50	18.00	
30 x 52 to 30 x 54	25.75	23.25	19.25	
30 x 56 to 34 x 56	27.75	25.00	21.75	
34 x 58 to 34 x 60	29.25	27.75	24.00	
36 x 60 to 40 x 60	33.25	30.00	27.75	

An additional 10 per cent. will be charged for all glass more than 40 inches wide. All sizes above 52 inches in length and not making more than 81 united inches, will be charged in the 84 united inches bracket.

BOSTON.

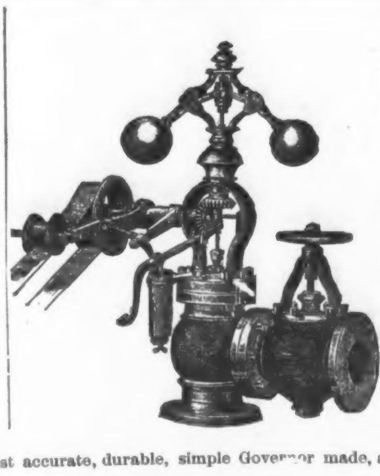
Reported by Macomber, Bigelow & Dowse, 156 to 164 Oliver St.

Anvils.—"Eagle American" .... ℔ 9½c. dis 20 %
Apple Parers.
Reading "78" .... per doz., $7.50
Reading "76" .... per doz., 6.00
Reading "72" .... per doz., 5.00
Goodell Turn Table .... per doz., 5.50
Goodell Improved Turn Table .... per doz., 7.50
Goodell Family Corer and Slicer .... per doz., 7.00
Hudson's Improved "80" .... per doz., 6.50
Goodell Lightning .... per doz., 6.00
Aiken's Tools .... dis 40&10 %
Anvil & Vise.—
No. 1, $5.25; 2, 4.25; 3, 3.50 each .... dis 25 %
Augurs & Bitts.—Snell's Auger .... dis 40 %
L'Hommedieu's Ship Augers .... dis 15 %
Jenning's Bitts .... dis 10&10&10 %
Cook's Bitts .... dis 40&10 %
Sheparason's Double-Cut Bitts .... dis 45 %
" " Gimlets .... dis 40 %
Stearn's Extension Hollow Augers—
No. 2, ℔ doz, $48.00, No. 3, ℔ doz, $60.00 list, dis 20 %
Bonney's Extension Hollow Augers .... ℔ doz $36.00
Pierce's Bitts .... dis 35 %
Griswold " .... dis 40 %
Axes.—Blue Jackets .... per doz 9.00
Red Cross .... per doz 8.00
" Handled .... per doz 12.00
Dowse " Boys' .... dis 30 %
Ax Handles.—
Oak Extra, 31 in., No. A .... ℔ doz $2.00
" 34 in., No. A .... ℔ doz 2.25
" 31 in., No. B .... ℔ doz 1.50
" 34 in., No. B .... ℔ doz 1.75
" 31 or 34 in., No. C .... ℔ doz 1.15
Axle Clips .... dis 10 %
Balances.—Chatillon's .... dis 15&10 %
Barn Door Rail.—
Cast Angle (for Anti-Friction Hangers) .... per ft. 3c
" Half-Round .... per ft, ⅝, 5c ¾, 6½c
Wrought " .... per ft, ⅜, 4c; ⅝, 5c; ¾, 6c
Bells.—Connel's Crank Gong reduced list .. dis 20&10 %
Bird Cages.
Japanned M. B. & D., reduced list, 1879 .... dis 40 %
Brass " " 1879 .... dis 33⅓ %
Blind Fasts.—Lock Fasts .... ℔ C sets $6.00
No. 6 Fasts .... ℔ C sets 6.50
Veazie Fasts .... ℔ C sets 6.50
Shedd's .... ℔ C sets 7.00
Blind Hinges.—Mall. Hook, 3 holes .... ℔ C sets 8.50
Brad Awl Handles.—
Phœnix Adjustable .... ℔ doz $2.00
Bolts.—Norway Iron Carriage .... dis 70&5 %
Common " .... dis 80&5 %
Borax.—Refined .... ℔ ℔ 12c
Boring Machines.
Eagle Upright each, ... $5.50 list } dis 40 %
Eagle Angle each, ... 6.75 list }
Snell Augers .... ℔ set 2.70
Braces.—Barber's .... dis 40 %
Spofford's .... dis 50 %
Backus' .... dis 50 & 10 %
Bracket Saws.—Holly Scroll Saw .... each, $2.50
Demas Lathe and Scroll Saw .... " 6.50
Bracket Saws, extra quality, to No. 5 ...... ℔ gro $0.75
Steel Frame, with patterns .... ℔ doz 6.50
Lester .... dis 20 %
New Rogers, all iron .... dis 25 %
Bracket Saw Blades.
Griffith's patent .... ℔ gross 75c
Brackets.—B. B. & M. Flower Pot reduced list—
.... dis 25&10 %
Bronzed Shelf, M. B. & D. new list .... dis 50 %
Store Shelf .... dis 40 %
Bronze Hardware.—
Butts.—Union Fast Joint .... dis 40&10 %
Loose " .... dis 50&10 %
" Japanned Acorn .... dis 55&10 %
" Silvered " .... dis 55&10 %
" Boston Finish .... dis 75&10 %
Union Spiral Spring .... dis 40 %
Wrought Brass .... dis 45 %
Carriage Bolts.—Eagle Norway .... dis 70&5 %
Common .... dis 80&5 %
Carriage Jacks.
"Climax" No. 1 .... ℔ doz $20.00
" No. 1½ .... " 15.00
" No. 2 .... " 13.50
"Universal" .... dis 25 %
" No. 1 .... each, $2.00
" No. 2 .... " 3.00
" No. 3 .... " 6.00
" No. 4 .... " 6.00
" No. 5 .... " 6.50
Cartridges.—U. S. Cartridge Co .... dis 60&10 %
Cards.—Watson's make Horse and Curry .. dis 10 %
" Cotton .... dis 10 %
" Wool .... dis 10 %
Casters.—Bed and Table .... dis 25&10 %
Chain.—Traces 6½, 10, 4, streight .... ℔ pair 45c
" 6½, 10, 4, twisted .... ℔ pair 50c
" 7, 12, 2, " .... ℔ pair 75c
Coil 3-16 .... ℔ ℔ 11 c
" ¼ .... ℔ ℔ 8½c
" 5-16 .... ℔ ℔ 8 c
" ⅜ .... ℔ ℔ 7 c
" 7-16 .... ℔ ℔ 6½c
" ½ .... ℔ ℔ 6¼c
Chalk.—White, Carpenter's .... ℔ gross 60c
Red, Carpenter's .... ℔ gross 80c
Blue " .... ℔ gross $1.00
Chisels.—Hart, Bliven & Mead, Framing dis 60&10&10 %
Underhill, Framing .... dis 20 %
Buck's Chisels .... dis 30 %
Clothes Line.—
Galvanized Wire, 100 feet each .... ℔ doz $4.50
Coal Hods.—"Dover."—Galvanized, new list, dis 50 %
Japanned, new list .... dis 40 %
Coffee Mills.—New list .... dis 35 %
Copper Rivets .... dis 35 %
Cow Ties .... dis 33⅓ %
No. 30, 3 ft. No. 6 Wire, with toggle .... ℔ doz $3.00
No. 35, 3 ft. " " with snap .... ℔ doz 3.50
No. 40, 3½ ft. " " with toggle .... ℔ doz 3.90
No. 45, 3½ ft " " with snap .... ℔ doz 4.10
No. 50, 4 ft. No. 4 " with toggle .... ℔ doz 4.50
No. 55, 4 ft. " " with snap .... ℔ doz 4.75
No. 60, 4½ ft. " 3 " with toggle .... ℔ doz 5.00
No. 65, 4½ ft. " " with snap .... ℔ doz 5.50

Cocks.—Brass, L. F. & C. .... dis 40 %
Cordage.—Manila, usual trade dis 10 .... ℔ ℔ 13c
Jute .... ℔ ℔ 9c
Crow-Bars. Cast Steel .... ℔ ℔ 6c
Iron Steel Pointed .... ℔ ℔ 5c
Cutlery.—Pocket, American Shear Co.'s .... dis 40 %
Butcher Knives, "Woods," Lap Bolster.
Square Handle .... dis 20 %
Steak Knives .... dis 10 %
Lap Bolster, Oval Handle .... dis 10 %
Sticking .... dis 20 %
Skinning .... dis 20 %
Butcher, Common Round Handle, "Woods" ... dis 20 %
Shoe Knives, "Woods" .... dis 10 %
Dividers.—Cook's .... dis 25 %
Dog Collars .... dis 20 %
Dog Muzzles.—Automatic .... dis 15 %
Door Springs.—Torrey's Rod .... ℔ doz $2.00
Imitation Torrey's Rod .... ℔ doz $1.75
Gem Coil .... net list
Crown .... ℔ doz $1.2[illegible]
Warners .... ℔ doz $2.0[illegible]
Door Stops.—"Thurston's" .... dis 45 %
Drawer Knobs.—"Thurston's" .... dis 45 %
Drills.—Morse Bitt Stock .... dis 25 %
Morse Straight Shank .... dis 20 %
Emery.—Wellington Mills .... ℔ ℔ 10c
The Alden Emery Co .... ℔ ℔ 6c
Turkish in 10 ℔ cans .... ℔ ℔ 2c
Enamelled Ware.
Standard Mfg. Co. Kettles .... dis 40&10 %
" Sauce Pans .... dis 25 %
FelloePlates.—Wrought .... ℔ ℔ 9c
Files.
American File Co. .... dis 30 %
Nicholson " .... dis 30 %
Fluting Machines.
Knox list, $3.00 .... dis 10 %
American list, $4.40 .... dis 10 %
Forks. W. C. & Co., Manure .... dis 40 %
Gimlet Bitts.
Genuine German, No. 125, 1-32 to 8-32, per doz $1.00
Pierce's .... per doz 80c
Glass Cutters.
Combination Glass Cutter and Knife Sharpener .... ℔ doz $1.00
Grub Hoes.—K. P. & Co.'s No. 2, 11.50 ℔ doz. dis 30 %
Hammers.—Maydole's .... dis 15 %
Hammond's .... (new list.) .... dis 20 %
Hangers & Rollers.—Anti-Friction .... dis 40&10 %
Acme Rollers .... dis 50 %
Climax .... dis 50 %
Common Hangers .... dis 30&10 %
" Rollers .... dis 35&10 %
Hand Screws .... dis 10 %
Hatchets.—C. F. Dowse new list .... dis 30 %
Underhill .... dis 25 %
Hay Knives.—Lightning .... ℔ doz $18.00 net
Fisher's Patent .... ℔ doz @14.00
Hinges.—Strap and T (new list) .... dis 45&10 %
Providence Plate .... ℔ ℔ 5c
Wrought Screw Hook .... ℔ ℔ 5c
Hoes.—W. C. & Co.'s .... dis 40 %
Hooks and Staples.—Brewers' .... dis 40 %
Horse Nails. No. 6 7 8 9
National Finished .... .23 .21 .20 .19 .... dis 20 %
Putnam Pointed .... .26 .24 .23 .22 .... 10 %
Horse Nails.—Bridgewater .... dis 25 %
No. 6, 23; No. 7, 21; No. 8, 20; No. 9, 19.
Ice Cream Freezers.—"Packer's" .... dis 40 %
Knobs.—"Norwalk." New list .... dis 50 %
Silver Glass .... dis 50&10 %
" Bell Pulls .... dis 50&10 %
Lanterns.—Tubulars, No. 99 .... ℔ doz 7.50
Railroad, Oil, No. 43 .... ℔ doz 9.00
Triangular .... ℔ doz 4.00
Hurricane .... dis 20 %
Lead.—Sheet .... ℔ ℔ 7 c
Pipe .... ℔ ℔ 6½c
Locks.—Norwalk Genuine Bronze Goods .... dis 50 %
Eagle Cabinet .... dis 10 %
" Trunk .... list net
W. Wilcox & Co., Padlocks .... dis 40 %
American Lock Co.'s Steel Key .... dis 33⅓ %
Manure Forks.—W. C. & Co. .... dis 40 %
Mattocks.—K. P. & Co., Long Cutter, 16.00 ℔ doz.
.... dis 30 %
K. P. & Co., Short Cutter, 15.00 ℔ doz .... dis 30 %
" Pick " 16.00 ℔ doz .... dis 30 %
Measuring Tapes.—Eddy's .... dis 20 %
Meat Cutters.—Miles' Challenge .... dis 30 %
Hale's, (New list) .... dis 40 %
American .... dis 25 %
Money Drawers.—Tucker's Alarm ...... ℔ doz $22.50
Mouse Traps.—Delusion .... ℔ doz 2.00
Novelty .... ℔ doz 1.75
Nails .... ℔ keg. 3.15 rates
Oilers.—Zinc and Tin .... dis 45 %
Brass and Copper .... dis 33⅓ %
Ox Bows.—Extra finished and varnished .... list net
1¼ in., ℔ doz. pair .. $5.75 | 2 in., ℔ doz. pair $9.00
1¾ in., " " .. 8.00 | 2¼ " " 11.00
Padlocks.—W. Wilcox & Co.'s .... dis 40 %
Paper.—Tarred Sheathing .... ℔ ℔ 2¾c
Dry Sheathing .... ℔ ℔ 2½c
Picks.—K. P. & Co., Adze Eye, 5 to 6 ℔ 12.00 .... dis 30 %
" " 6 to 7 ℔ 13.00 .... dis 30 %
Planes.—Greenfield Tool Co. .... dis 25 %
N. Y. Tool Co .... dis 30 %
English Iron .... dis 20 %
Bailey's .... dis 20&10 %
Plated Ware.—Rogers & Bro .... dis 33⅓&5 %
Pliers.—Vom Cleff & Co.'s .... net list
Button's Wire Pliers .... dis 33⅓ %
Plumb & Levels.—Stanley, R. & L. Co .. dis 60&10 %
Pocket Knives.
American Shear Co.'s .... dis 33⅓&10 %
Potato Diggers.—W. C. & Co. reduced list ... dis 40 %
Pulleys
Acme or Excelsior, 1¾ in .... per doz 25c
" " 2 in .... " 26c
Pulley Blocks .... dis 40 %
Pumps.—Union Manufacturing Co.
Iron Cistern .... dis 35 %
" Pitcher Spout .... dis 35 %
Copper .... dis 50 %
Rivets.—Black .... dis 40 %
Carriage in 10 ℔ papers .... dis 20 %
Copper .... dis 35 %
Razors.—Torrey's .... dis 10 %
Razor Strops.—Torrey's .... Full line.
Rules.—Stanley .... Boxwood, dis 60&10 %
" .... Ivory dis 60&10 %
Sadirons.—Common .... ℔ ℔ 3¾c
Laundry .... ℔ ℔ 6¼c
Tailor's Geese .... ℔ ℔ 6c
Enterprise, "Potts" .... dis 30 %
Sash Locks.—King & Hutchinson's new list. dis 40 %
Sandpaper.—Baeder & Adamson .... dis 25 %
M. B. & D. .... dis 25&5 %
Sash Weights.—Patent Eye .... ℔ ℔ 1¾c
Saws.—Hand Saws, Disston's .... dis 20 %
Wheeler & Clemson .... dis 20 %
Cross-Cut Saws.
W. M. & C., Common Tooth, No. 1 .... ℔ foot 35c
" Champion " .... ℔ foot 35c
Disston's, Common " .... ℔ foot 40c
" Gt. American " .... ℔ foot 40c
Boynton's Lightning " .... ℔ foot 45c
M. B. & D., Hand Saws .... dis 25 %
W. M. & Co.'s. Circular Saws .... dis 35 %
Richardson Bros .... dis 25 %
Saw Blades.—Disston .... dis 25 %
W. M. & C. .... dis 10 %
Welch & Griffith, Extra .... ℔ doz $8.40
" " No. 2 .... ℔ doz 7.00
Scales.—Fairbanks .... dis 20 %
Screws.—Aiken's Flat-Head Iron .... dis 45 %
American Flat-Head Iron .... dis 45 %
" " Brass .... dis 35 %
" Round-Head " .... dis 20 %
" " Iron .... dis 35 %
Grilley " Nickel-plated Common. dis 50
Scythes.—Clippers, in boxes .... ℔ doz $9.00
Shaves.—Kimball's .... ℔ inch 7½c
Watrous .... dis 15 %
Shears.—American Shear Co., new list ..... dis 70 %
Shot.—Tatham's .... ℔ ℔ 7½c
Shovels.—O. Ames, new list .... dis 10 %
O. Ames, other brands, new list .... dis 10 %
M. B. & D. .... dis 10 %
Oxford Birmingham Pattern .... dis 45 %
Sinks.—Magee Patent .... dis 30 %
Snow Shovels.—Malleable tips ....
Skates.—Union .... dis 25 %
Acme .... dis 20 %
Stock and Dies.—King's .... dis 10&5 %
Tacks.—A. Field & Son's .... dis 20&10 %
Pittsfield .... dis 20&10 %
Swedes Tinned .... 35&10 %
Swedes Iron .... 20&10 %
Gimp and Lace .... 20&10 %
Copper Tacks .... 25&10 %
All balances on list .... 15&10 %
Traps.—Oneida, Genuine .... dis 33⅓ %
Oneida, Imitation, H. & N .... dis 50 %
Blake's .... dis 40 & 10 %
Vises.—Simpson's Adjustable .... dis 25&5 %
Howard Vise Co .... dis 25 %
Prentiss' .... dis 20 %
Weather Strips.—Packer's .... ℔ doz $4.50
Browne's Flexible Rubber .... dis 30 %
In 20 feet boxes; No. 1, ½ in. wide, ℔ yard, 10c.; No. 2, ⅝ in., 15c.; No. 3, ⅞ in., 20c.; No. 4, 1 in., 25c
Black Walnut Spring Weather Strips ... ℔ doz. $3.00
Window Springs .... dis 20 %
Babcock's No. 3 .... ℔ gross $6.25
" " 4 .... ℔ gross 4.25
Wire Cloth.—"Clinton" .... ℔ ft. 3½c
Wire Fence.
Scutt's Patent, Painted .... ℔ ℔ 7¾c
" Galvanized .... ℔ ℔ 8¾c
Wire Goods.—Gate Hooks and Eyes, &c new list .... dis 60&10 %
Wrenches.—A. G. Coe's .... dis 50 %
Girard Mfg. Co .... dis 50&10 %
Girard Agl .... dis 60 %
Wringers.—Universal, No. .... ℔ doz $[illegible]
Universal, No. 1½ .... ℔ doz [illegible]
Novelty, No. 10 .... ℔ doz [illegible]
" No. 2 .... ℔ doz [illegible]
" No. 22 .... ℔ doz 67.00
Excelsior, No. A .... ℔ doz 75.00
" No. B .... ℔ doz [illegible]
" No. CC .... ℔ doz [illegible]
Novelty Set Tub, E .... ℔ doz [illegible]
Eureka .... ℔ doz 54.00
Keystone, Wood Frame No. 1½ .... ℔ doz [illegible]
" Iron Frame No. 1½ .... ℔ doz [illegible]
Zinc .... ℔ ℔ 7½c
Withington, Cooley & Co.—Hoes, Rakes, Forks &c dis 40 %. Special rate for Export.

Machinery, &c.

THE JUDSON GOVERNOR, WITH Stop-Motion, Spring Speeder, Sawyer's Lever AND Stop Valve.



PRICE LIST,
May 10, 1880.

Size, Inch.	Plain.	Bright Fin-ished.	Extra for Spe'd'r	Stop M't'n& Spe'd'r
½	$15.00	$17.00	$1.60	....
¾	16.00	18.00	1.70	....
1	18.00	20.00	1.8c	....
1¼	20.00	23.00	1.90	....
1½	23.00	27.00	2.00	$4.5c
2	27.00	31.00	2.20	6.00
2¼	32.00	37.00	2.40	7.00
2½	36.00	41.00	2.60	7.00
2¾	40.00	46.00	2.80	8.00
3	45.00	52.00	3.00	8.00
3½	54.00	62.00	3.25	9.00
4	64.00	73.00	3.50	10.00
4½	74.00	84.00	3.75	11.00
5	84.00	95.00	4.00	12.00
5½	97.00	109.00	4.25	14.00
6	110.00	123.00	4.50	15.00
7	130.00	144.00	5.00	17.00
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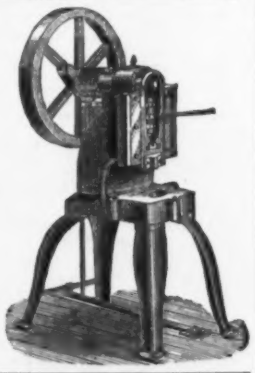

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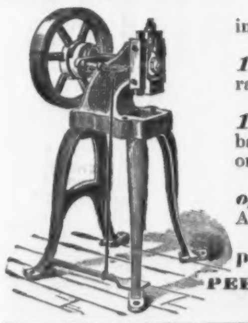

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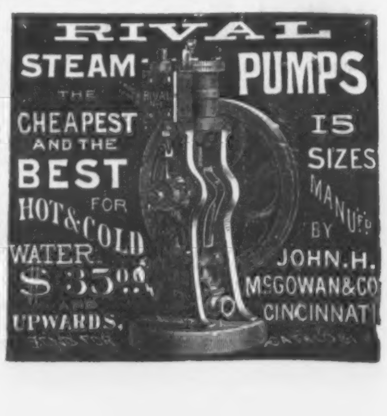

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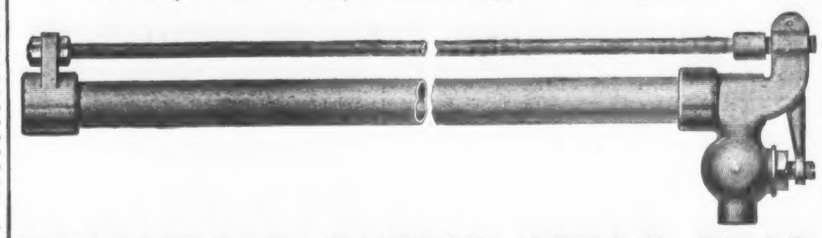

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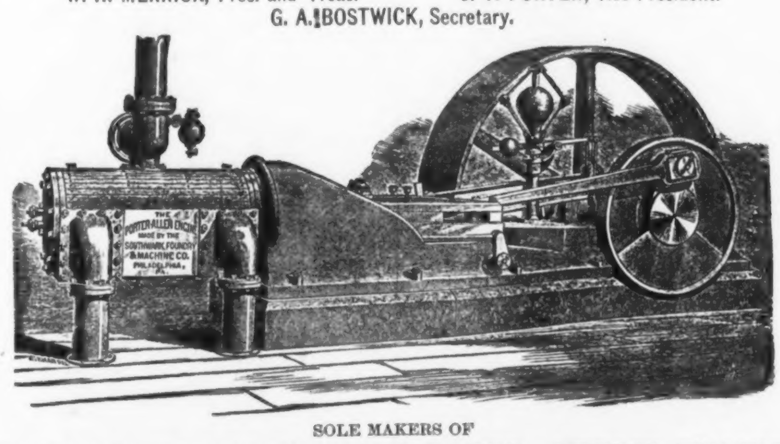

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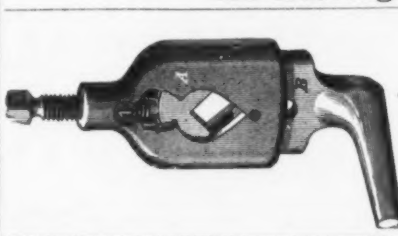

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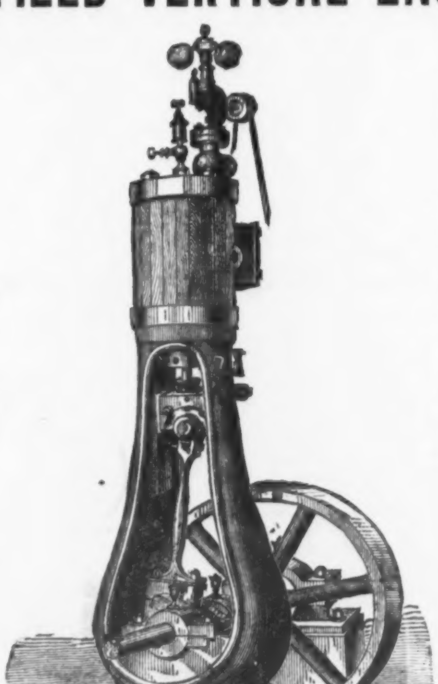

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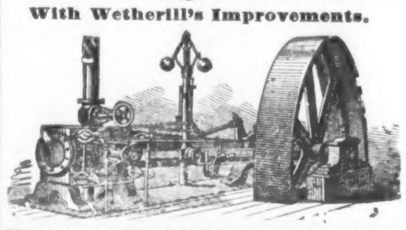

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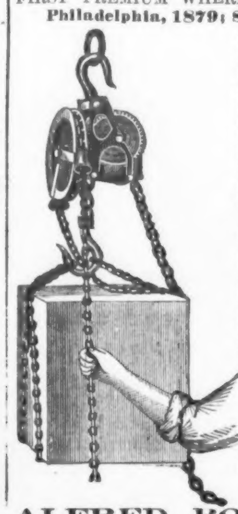

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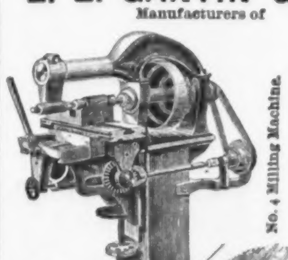

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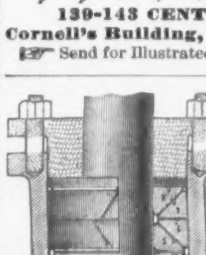

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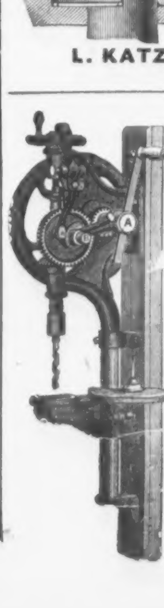

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